SAFETY NEWS

a development of Radio Corporation of America
and Mine Safety Appliances Company
to provide industry with the best possible
over-the-ear protection against excessive noise

The New Noisefoe Mark II

MSA, working with RCA, and drawing on the vast experience and technological breakthroughs of both companies in the noise field, now brings you over-the-ear protection with these specific advantages:

- **maximum attenuation,** minimum weight and pressure
- **stylized appearance** encourages wearer-acceptance
- **durable plastic cycolac** ear cups fit 99% of all wearers
- **seal flange contours** insure positive acoustic seal
- **replacement parts** available and easy to assemble
- **vinyl headband** cleans easily with soap and water

If you have a potential hearing damage problem due to shrill, harsh noises in military or industrial operations, our new Noisefoe Mark II will prove helpful.

Attenuation data, design, and construction features of the Noisefoe Mark II are described and illustrated in a new four-page bulletin, available on request. Write for your copy, today. There's no obligation. Mine Safety Appliances Company, 201 North Braddock Avenue, Pittsburgh 8, Pennsylvania. Mine Safety Appliances Company of Canada, Limited, 500 MacPherson Avenue, Toronto 4, Ontario.

MSA...where safety problems become
safety products through research

MSA® SAFETY EQUIPMENT HEADQUARTERS

NOW...in three popular *RIPPLE® Sole styles

"The SAFEty SHOES that WALK for you"

B 7-12
C 6-12
D, E 5-12

H947 . . . Men's black glove Chukka shoe, oil-resistant Beebe Ripple® sole, Durisco mildew-proof lining, Anchor Flange® Steel Box Toe, completely Dacron stitched, Director last.

CHUKKA

NOK-A-BOUTS

OXFORDS

H539 . . . Men's brown grain sides oxford, oil-resistant Beebe Ripple® sole, Durisco mildew-proof lining, Anchor Flange® Steel Box Toe, Dacron stitched, Crescent last.

H538 . . . Same in black.

A, B 7-12, 13
C 6-12, 13
D, E 5-12, 13

* **Absorbs Walking Shock**
Lengthens the Stride
Balances the Weight
Provides Better Traction

For your men who walk a lot on and off the job, HY-TEST offers *three* trim, high-style Ripple® Sole NOK-A-BOUTS . . . a brown oxford, a black oxford, and a black Chukka shoe. They feature the scientifically-designed sole that propels you forward and makes walking easier . . . *plus* the safe, sure protection of the exclusive Anchor Flange® Steel Box Toe. May we send you full details?

HY-TEST SAFEty SHOES
Division
INTERNATIONAL SHOE COMPANY
1509 Washington Ave., St. Louis 66, Mo.
Teletype: SL300
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Teletype: PH476

HY-TEST

SAFEty SHOES FOR EVERY NEED

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Circle Item No. 1—Reader Service Card

National SAFETY NEWS

A NATIONAL SAFETY COUNCIL PUBLICATION

Vol. 79, No. 1 JANUARY 1959

EDITORIAL

FEATURE ARTICLES

PLANT PROTECTION

DEPARTMENTS

National Safety Council

Chartered by the Congress of the United States

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NATIONAL SAFETY NEWS is published monthly by National Safety Council. Printed in U. S. A. Entered as second class matter June 21, 1921, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Subscription rate: $6.50 a year. Single copies $1.00. All prices subject to 10 per cent discount to National Safety Council members. Quantity prices for yearly subscriptions and single issues on request. Member Audit Bureau of Circulation.

THE COVER

John Ronaldo, field supervisor at the Greer Earthmoving School, gives NSC Industrial and Public Information staff men a thrill as he shows how a bulldozer operator can take his machine down a steep embankment. Secret is to keep some dirt in front of the blade.

37,200 copies of this issue were printed.

This kind of style appeal sells foot safety!

new! black! Slipon-moc Safety Shoe

Stock No. 1651

One of America's best-selling dress and leisure designs makes a best-selling safety shoe, too! It has STYLE APPEAL – strongest inducement you can offer for the man who resists safety shoes; an extra pair for the man who already wears them. Order a sample pair for display. It's a shoe that every man can use.

Lehigh
SAFETY SHOE COMPANY
Emmaus, Pa.

Circle Item No. 2—Reader Service Card

EDITORIAL

THE ART PRESERVATIVE

THIS MONTH we celebrate the birthday of the country's patron saint of printing. Although remembered as a statesman, a philosopher and an inventor, Benjamin Franklin was proud to be known as a printer.

So the week containing his birthday (January 17) is designated throughout the United States as National Printing Week.

During this week we honor the craftsmen who make possible our cultural and technical progress.

Many men have contributed to the development of the craft since Johann Gutenberg printed his first book from movable type on a crude hand press some 500 years ago. But few of them are known to fame.

How different history might have been, if printing had been known 3,000 years earlier. The ancients had a vast fund of knowledge, much of which was lost when wars, plagues, and other catastrophes wiped out the learned along with the illiterate.

Gutenberg's primitive methods, with a few refinements, were still in use at the beginning of the nineteenth century. The industrial revolution brought steam power, and through Hoe's cylinder press it speeded the output of printed pages. Later, Mergenthaler's typesetting machine provided still faster wings for thought. Photography, photoengraving, stereotyping, and electrotyping all made their contributions to more effective communication.

Suppose that all the printing presses of the world should stop, and all existing printed matter were destroyed. What would it mean to the world—and to each of us personally?

All but the simplest activities would come to a complete stop. Editors (and quite a few other people) would lose their jobs. Not all of them would have the skills to exist in a civilization that had suddenly gone primitive.

And imagine business trying to get along without printed products. Within a short time commerce and industry, as we know them, would come to a standstill.

We complain about paper work, but where would we be if all records were lost? Telephone, radio, and TV couldn't fill the void. They need printed forms and information, too.

With word of mouth as the only medium, education could continue only in a most elementary form. With all printed material destroyed, only fragments of the thoughts, ideas, and experience of the ages would survive in individual memories.

The postal service couldn't exist. There would be little or no news from outside our own neighborhoods. We would be deluged with rumors.

Fortunately, chances of such a disaster are remote. Thanks to the graphic arts, essential knowledge is so widely distributed that, short of complete destruction, the world could make a comeback.

FLAMMABLES ENGINEERING BY PROTECTOSEAL

FLAMMABLES CONTROL METHODS AND PRACTICES IN PRODUCTION, PROCESSING AND IN MAINTENANCE

PUBLISHED BY THE PROTECTOSEAL COMPANY, CHICAGO, ILLINOIS • WAREHOUSES: CAMDEN, N. J.; LOS ANGELES, CALIF.

WHAT'S NEW...

NEW 5-GALLON SPACE-SAVING SUPPLY CAN

APPROVED FACTORY MUTUAL

SAVES SPACE— STORES EASILY SIDE-BY-SIDE OR VERTICALLY

Stored Side-By-Side

New oval shape saves space . . . spout swivels to convenient "tuck-a-way" position over body.

Stored Vertically On Brackets

Inexpensive one-piece brackets permit space-saving stacking.

⅞" diameter flexible metal pouring spout guides liquid flow . . . prevents spillage . . . guards against static sparks.

Oval shape carries conveniently in effort-saving, close-to-the-body position.

Pours Easily— Stops Spills

Flame arresters at both spout and fill openings protect contents against ignition . . . automatic vapor-pressure relieving cap prevents explosion of can under extreme heat.

For Further Information Circle Item No. 16 on Coupon

Continuous solvent applications safely speeded

Production line workers apply solvents and liquid adhesives with one hand . . . and move production parts on their way with the other hand . . . secure smooth, effortless, continuous parts flow. Number of hand operations sharply reduced. Pad or cloth moistened correctly with one stroke of spring-mounted dasher . . . no waste . . . no spillage. Perforated metal dasher acts as flame arrester . . . prevents ignition of contents . . . protects worker.

Depress for solvent . . . Release for safety!

Production line applications of volatile liquids frequently include laminating and cleaning . . . an instrument maker uses an acetone binder in assembling plastic parts . . . an appliance manufacturer removes excess adhesive which attaches fiberglas insulation to refrigerators. Result—production output increased, hazardous flammable vapors reduced . . . aid in eliminating flash fires.

New illustrated Guide describes all types of safety applicator cans which fit naturally and easily into all production line work and greatly reduce release of annoying hazardous vapors.

Even the operator feels good — no more discomfort or costly time off the job due to noxious vapors . . . happier, too . . . with better piece rate bonuses.

For Guide to Applicators, Circle Item No. 24 on Coupon

A safe, approved method for storing flammables at-the-job

APPROVED BY N.F.P.A., BOARD OF STANDARDS & APPEALS, CITY OF NEW YORK, PENNSYLVANIA STATE POLICE BUREAU OF FIRE PROTECTION.

Avoid the hazardous practice of scattering flammable liquid containers throughout the plant . . . comply with fire department and insurance company safety regulations . . . but keep adequate supplies of flammables close to work stations.

Locate approved flammables storage cabinets at convenient job locations. Supplies are then instantly accessible . . . safety stored.

Protectoseal Storage Cabinets are approved for the storage of up to 45 gallons when flammables are kept in safety cans of not more than 5 gallons capacity each.

For Further Information Circle Item No. 11 on Coupon

Locating Vapor Hazards

The uncontrolled propagation of flammable liquid vapors is more prevalent during cold winter months when doors and windows are closed and the danger of flash fires is greatly increased. To assist Safety Engineers and plant men in locating all vapor breeding hazards throughout the plant, a convenient series of Self-Checking Charts has been prepared for self-examination.

There is no quicker, easier method of securing a complete record and of providing a thorough check for fire preventive measures.

For Self-Checking Charts Circle Item No. 23 on Coupon

DATA OF INTEREST AND VALUE TO PLANT SAFETY DEPARTMENT

Additional Protectoseal Equipment:

Supply Cans (Item 25) | Safety Cans (Item 26) | Drum Faucets (Item 10) | Wash Tanks (Item 27) | Tilt Cans (Item 28)

☐ Complete Catalog of Protectoseal Safety Production Equipment

☐ More Information on Items Circled Below:

10 11 16 23 24 25 26 27 28

THE PROTECTOSEAL COMPANY
1928 South Western Avenue, Chicago 8, Illinois

Name_____

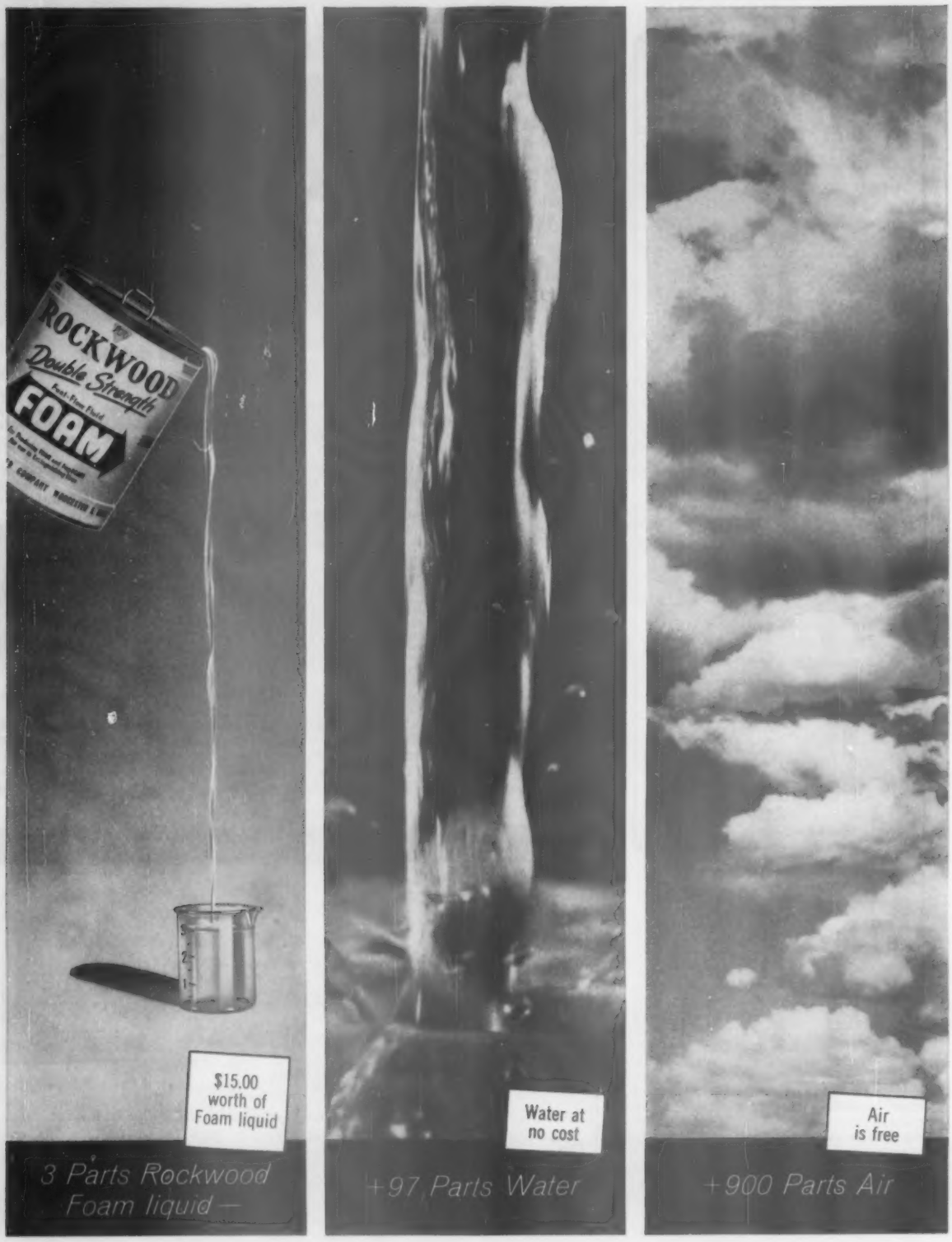
Title_____

Company Name_____

Address_____ City & State_____

Circle Item No. 3—Reader Service Card

Rockwood Double Strength Foam



Adds Up To SAVINGS

Rockwood Double Strength FOAM liquid binds large volumes of air and water into a fast, inexpensive fire extinguishing agent. It can save you hundreds, even thousands of dollars in the cost of your fire fighting materials.

If you use other types of fire extinguishing agents — you're paying for 100% of the extinguishing agent, plus storage and shipping. With Rockwood FOAM you're paying for only 3 tenths of 1% and *shipping costs are less — storage costs greatly reduced!*

Get all the money-saving facts. Send in the coupon below for complete information. Tested and listed by Underwriters' Laboratories, Inc. Distributors in all principal cities.

ROCKWOOD SPRINKLER COMPANY

Engineers Water ... to Cut Fire Losses

ROCKWOOD

ROCKWOOD SPRINKLER COMPANY
Portable Fire Protection Division
1267 Harlow Street
Worcester 5, Massachusetts

Please send me your illustrated booklet on Rockwood fire-fighting products.

Name.....

Title.....

Company.....

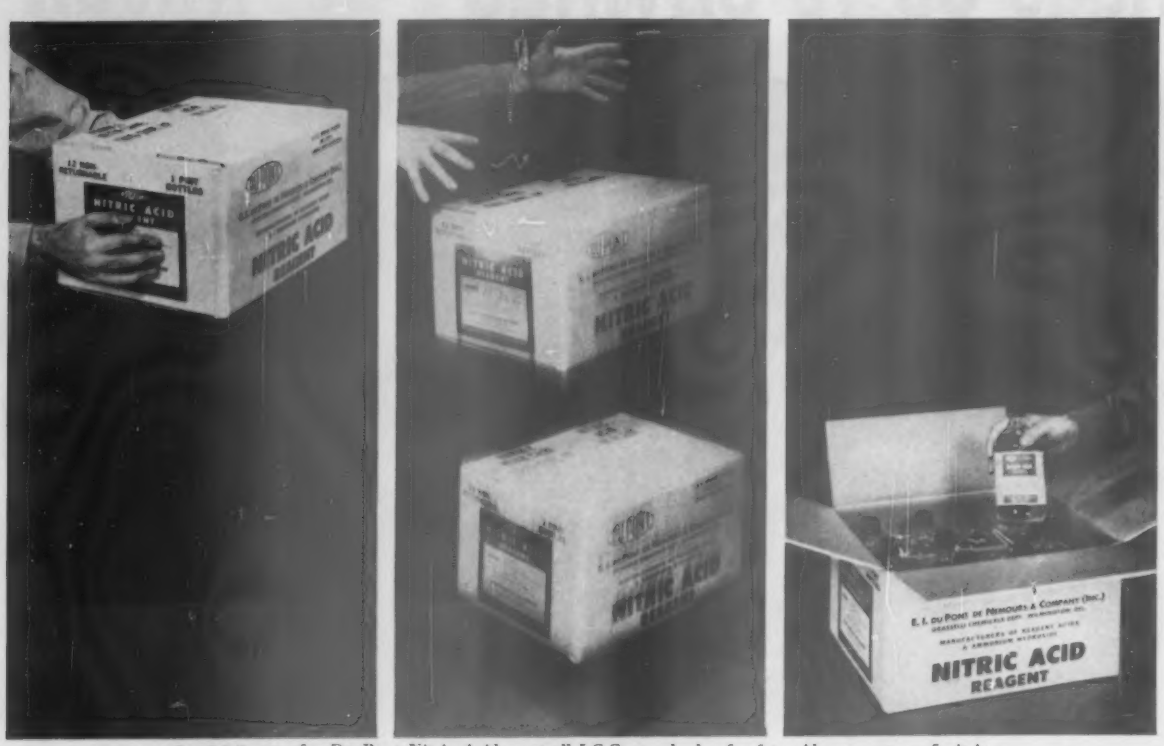
Street.....

City.....

Zone..... *State*.....

Circle Item No. 4—Reader Service Card

Another packaging development from Du Pont!



Special Cartons for Du Pont Nitric Acid meet all I.C.C. standards of safety. Above, carton of nitric acid is dropped a distance of 4 feet to concrete floor. Package absorbs shock, protects the bottles.

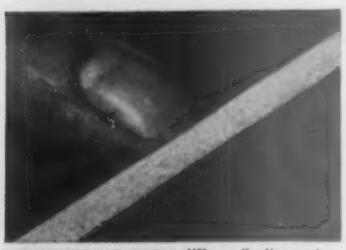
Now...DuPont Nitric Acid in Foam-Cushioned Cartons

New disposable containers absorb shock, resist breakage

Now, you get added safety and convenience when you order Du Pont Nitric Acid . . . thanks to new foam-cushioned cartons. Unique boxboard construction features an inner core of shock-absorbing plastic foam to reduce danger of breakage. Far lighter than bulky wooden crates, these rugged cartons are easier to open, take less storage space.

New easily disposable cartons for Nitric Acid join a list of other Du Pont packaging developments including: *Single-trip Cartons* for *all* reagents. *Safety Grips* on all heavier 5-pint bottles provide a secure and convenient hold for lifting and pouring. *Dripless Sleeves* of polyethylene make pouring safer, more accurate. *Color Coding* of labels and caps insures identification, helps prevent contamination.

On your next order, specify Du Pont Reagents. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.



THE SECRET'S IN THE CORE! "Fome-Cor" container board manufactured by St. Regis Paper Co. has shock-absorbing, acid-resistant inner core of plastic foam. For added protection, same material is used in construction of bottle nests.

DU PONT REAGENTS

ACETIC ACID GLACIAL • AMMONIUM HYDROXIDE
HYDROCHLORIC ACID • SULFURIC ACID
NITRIC ACID

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

GRASSELLI SALES OFFICES: Atlanta 8, Ga., 739 West Peachtree Street; Boston 10, Mass., 140 Federal Street; Chicago 32, Ill., 4251 South Crawford Avenue; Cincinnati 2, Ohio, 603 Terrace Hilton Bldg.; Cleveland 14, Ohio, 1321 National City Bank Bldg.; Detroit 35 Michigan, 13000 West 7 Mile Road; Milwaukee 13, Wisc., 6500 West State Street; Minneapolis 2, Minn., 1207 Foshay Tower; New Haven 13, Conn., 46 River Street; New York 1, N. Y., 350 Fifth Avenue; Wynnewood, Pa., 308 East Lancaster Ave.; Pittsburgh 19, Pa., 1715 Grant Bldg.; St. Louis 5, Mo., 10 S. Brentwood Blvd., Clayton. **On West Coast:** Braun-Knecht-Heimann Co., 1400 16th Street, San Francisco 19, Calif.; 650 West 8th South, Salt Lake City, Utah; Braun Chemical Corp., 1363 South Bonnie Beach Place, Los Angeles 54, Calif.; 1745 Imperial Ave., San Diego, Calif.; 2930 West Osborne Road, Phoenix, Ariz.; Van Waters & Rogers, Inc., 4000 First Avenue South, Seattle 4, Wash.; 3950 Northwest Yeon, Portland, Oregon; 801 N. Washington, Spokane, Wash.; Scientific Supplies Co., 600 Spokane St., Seattle 4, Wash.; 713 S.W. 12th St., Portland, Oregon. **In Canada:** Du Pont of Canada Limited, Box 660, Montreal, P.Q., Canada.

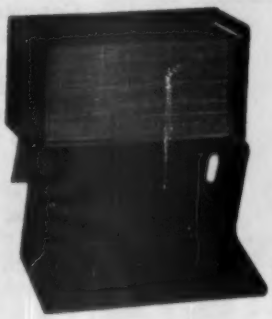
"Fome-Cor" is a trademark of St. Regis Paper Company

Circle Item No. 5—Reader Service Card

THE BIG SHEET IN THE DISPENSER WITH NO MOVING PARTS

You have enough costly troubles without fixing dispensers. Magic Dispensers are trouble-free. No moving parts. Nothing to break, maintain, adjust or replace. The compact 20 gauge steel dispenser is pilfer-proof; locks with a key. Needs no screws, no drilling. Just stick it to the wall.

Magic Silicone tissue sheet is 50% larger and twice the tearing strength. Each sheet is big enough to clean the largest of safety goggles. Every square inch is packed with Silicone's Sparkle Power – and both sides of the sheet. Magic tissue is interfolded, serving only one sheet at a time – not in wasteful bunches. It's the interfolding that does it, and that's an exclusive feature with MAGIC.



MAGIC LENS TISSUE

NO MOVING PARTS
NEVER NEEDS
TO BE REPAIRED

Dispensers shown in open position.

Magic Heavy-Duty Cleaning Station is for dirty, oily areas or where Anti-Fog protection is needed on plastic or any eyewear. The Heavy 20 gauge steel Dispenser has no moving parts, locks with a key.

Magic Lens Cleaning and Anti-Fogging Fluid comes in pressure cans; no pumps or plungers; no refilling; no bottle troubles or breakage. 1400 applications per can.

Heavy-Duty Paper, not silicone-treated, is a superb super-strong, wet strength tissue. No scratching on plastic and no lint.

Exchange all your other Stations for Magic FREE

MAGIC Pop-Up Pack in self dispensing box for your desk or any place in the office, plant or laboratory, $11.95 carton of twelve boxes.

NO MOVING PARTS

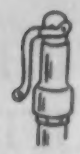
Magic
T.M. REG. U.S. PAT. OFF.
Cleaning Stations

The Silicone Paper Company of America Inc.
75 East 45th Street, New York 17, N. Y.

MAGIC SILICONE TISSUE	HEAVY-DUTY SYSTEM	
Magic Lens Tissue.....Carton $8.40 (Six 800 sheet refills per carton)	Heavy Duty Paper.....Carton $11.60 (18 giant 760 sheet refills per carton)	Magic Heavy-Duty Dispenser.....each $5.95 (Free when exchanged)
Magic Lens Tissue Dispenser (Free when exchanged)..each $2.50	Cleaning & Anti-Fogging Fluid 12-12 oz. cans .....Carton $12.50	All prices F.O.B. Shipping Point.

Circle Item No. 6—Reader Service Card

THE SAFETY VALVE



Nothing human is alien to me

—TERENCE

WHY BE A STATISTIC?

ELMER HUTZLEY, senior safety engineer for Campbell Soup and one of the stalwarts of the Council's Food Section, sends this New Year's message to safety men and the people under their protective care:

Now all of us insist that we
Are "different," individually
And will defend our status quo
With positive retort!
If you persist in actions rash,
Eventually you're going to crash
Into a very dull and slow
Statistical report!

Statistically, you may be
An incident numerically
Among the million accidents
That happen quarterly,
When added to the finger tips,
The fractured skulls and broken hips
Through actions common sense prevents,
Compiled so carefully.

In nineteen-hundred fifty-nine
Move toward old age serene and fine;
Protect your precious life and limbs
In all your actions daily.
Use care in everything you do.
Remember, Safety is for you!
Avoid all reckless, foolish whims
And live this New Year gaily!

A SAFE AND HAPPY NEW YEAR!

WHEN LIFE WAS RUGGED

THE FELLOW who feels abused when he gets a two-dollar fine for parking beside a NO PARKING sign may be thankful he didn't live in seventeenth century New England. Some of the laws on old statute books seem amusing now but folks didn't find them funny in those days.

Some of the laws alleged to have been in force in colonial days may be in the same class as the famous hoax about anti-bathtub legislation but individual conduct was regulated quite severely.

If a maidservant laughed in church, for example, her boss was liable to a fine. Planting a tree on the Sabbath was also punishable by a fine. In Rhode Island a 1639 law ordered all swine to be driven from corn lots.

Some of the laws were quite definitely in the interest of public safety. Citizens were fined if they galloped their horses on Main Street. Apparently Paul Revere didn't get pinched by any traffic cops.

A chimney fire subjected the householder to a fine which was divided between the informer and the poor of the community.

Laws also tried to make people take their public duties seriously. Fines awaited those who failed to attend town meeting or refused to accept public office without good reason.

* * *

Is there any music like that of a car starting on a cold morning?

* * *

RECOGNITION

CORPORATION BRASS have their names on office doors and semi-executives have theirs on desk plates. In some buildings the elevator operator's name is displayed in the car. On a recent visit to New Orleans, while riding on the bus named Desire, I noticed that the driver's name was shown on the dash.

The factory worker, however, remains an anonymous cog in the industrial machine. Why not have a name plate on every machine or bench?

It might help morale by recognizing the man as an individual rather than just a clock number.

* * *

A MAN'S DESK is good indication of his ability, efficiency, and ambition. A too-orderly desk has connotations as significant as a too-cluttered desk, says *Phoenix Flame.*

Those connotations, whatever they are, don't apply to me.

USEFUL SCREWBALLS

MOST OF US, I'm sure, would rather work with congenial, easygoing people than with tense, unconventional individuals. But many an eccentric has made important contributions to his employer and to the world.

A good screening job in the personnel department will insure a high proportion of employees who are good, steady workers with the right attitudes—in addition, of course, to the necessary job skills. Scientific selection will also keep out an occasional brilliant fellow whose abilities are hidden behind a repelling personality.

Of course, a whole organization of erratic geniuses would be utterly impossible. We need placid people, too, for a counterbalance. But an occasional rugged individualist, who isn't satisfied with things as they are, can often prevent stagnation.

It isn't always easy to tell a nut from a genius, and no human Geiger counter has yet been devised. It takes an understanding personnel man—and he won't be right every time.

Carman Fish

THE ACCIDENT BAROMETER

Prepared by Statistics Division, National Safety Council

THE DEATH total for September was about 7,600. This is no change from September, 1957. A decrease in deaths from motor-vehicle accidents was offset by an increase in home fatalities, while deaths from work and public non-motor-vehicle accidents numbered about the same as in 1957.

The nine-month death total was 66,800, or 5 per cent less than 70,200 in 1957. All classes showed decreases in deaths, with the largest reduction in motor-vehicle fatalities.

Motor-Vehicle Deaths

The motor-vehicle death total for September was 3,300, a decrease of 1 per cent from 1957. Compared to 1956, it was a reduction of 10 per cent.

Deaths for nine months totalled about 26,180, or 6 per cent less than 27,770 in 1957. The nine-month death rate per 100,000,000 vehicle miles is not available at this time, but for seven months the rate was 5.1, a reduction of 9 per cent from 1957.

For the nine-month period, 32 states had fewer deaths than in 1957; 1 had the same number; and 15 had more deaths. States with the greatest improvement for the first nine months of 1958 were: South Carolina, –25 per cent; West Virginia, –25 per cent; Iowa, –21 per cent.

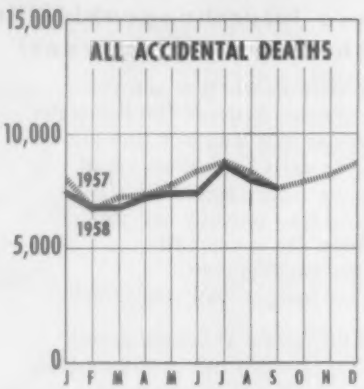
Reporting cities with populations of more than 10,000 had a decrease of 7 per cent for September and were down 5 per cent for the nine-month period. Cities with more than 200,000 population having the largest reduction in deaths for the first nine months of the year were: Toledo, Ohio, –43 per cent; Long Beach, Calif., –40 per cent; St. Louis, Mo., San Francisco, Calif., and Cincinnati, Ohio, each down 25 per cent.

Deaths from work accidents numbered 1,200–the same as in September, 1957. The total for nine months was 10,300, a decrease of 6 per cent from 1957.

The September frequency rate was 5.62 per 1,000,000 man-hours for plants in 18 sectional accident prevention contests conducted by the National Safety Council; this rate was 11 per cent more than 1957. The nine-month rate was 5.10, a reduction of 4 per cent from 1957.

Data on plants in community council contests is no longer available.

	1958	1957	Change
September	7,600	7,600	0
9 Months	66,800	70,200	–5%



Public Deaths

Deaths in September from public non-motor-vehicle accidents totalled 1,300. This is no change from 1957.

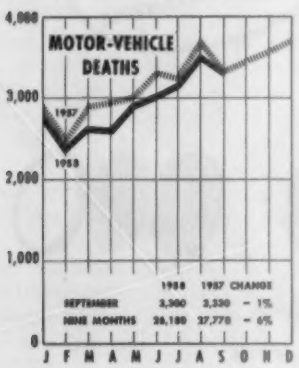
The nine-month death total was 13,000, or 6 per cent less than 1957. This reduction occurred despite changes in the definition of Home that have reclassified some cases to Public. Most of the decrease was recorded in fatal burns, but deaths from drownings and falls also were fewer. Each age group showed a reduction from 1957, with the greatest improvement reported for children less than 5 years of age and persons 45 to 64 years old.

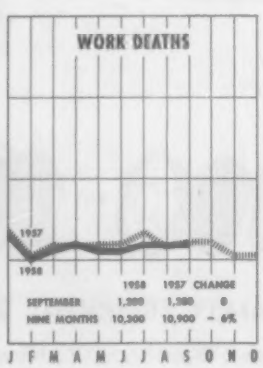
Home Deaths

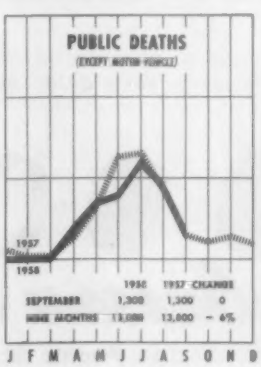
The total for home deaths in September was 2,050, or 3 per cent more than 1957.

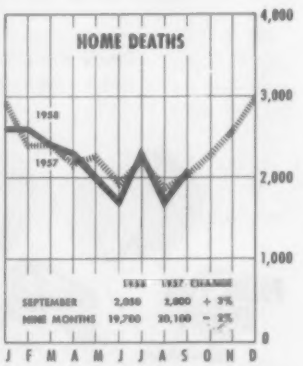
Deaths during the nine months numbered 19,700, a reduction of 2 per cent from 1957. There were decreases in deaths from falls and firearms accidents and increases in poisonings, burns and mechanical suffocation.

Most of the reduction occurred among persons 65 years and older, but deaths of children 5 to 14 years old and persons 25 to 44 and 45 to 64 years of age also were down.









Used in wide variety of applications throughout industry

Improve workers' safety . . . health . . . comfort . . . efficiency

VANO DESIGN "A" VENTILATOR is used here during repairs to a chemical still. This type ventilator is used to ventilate tanks, tank cars, drums, vats, underground cable manholes, pipe galleries, airplane wing compartments, fuselages and other confined places. Uses 8" diameter flexible canvas tubing ("Ventube").

VANO DESIGN "B" VENTILATOR here discharges welding fumes from double-bottom compartment in naval vessel under construction. Large volume of air handled quickly expels fumes and results in good ventilation. Vano Design "B" can pass through opening only 14" in diameter. Uses 8" diameter flexible canvas tubing ("Ventube").

VANO DESIGN "C" VENTILATOR here withdraws fumes from a reactor kettle. This ventilator can be furnished with 8" suction inlet for 8" non-collapsible suction tubing — or multiple inlet nozzles for 5", 4", and 3" suction hose. The discharge may be connected to 8" "Ventube." Capacities furnished on request.

NO. 2 AEROPLANE HEAT KILLER here directs cool, fresh air on worker in drop forge plant. Heat killers restore workers' efficiency by providing extra ventilation in the hot months, or on any job where workers are continually or periodically required to work in excessive heat. Available in two types, three sizes in each.

VENTAIR DESIGN TE-4 VENTILATOR Gasoline Engine Driven, here delivers air into underground manhole. These ventilators provide fresh air to men in confined places, promoting safety, comfort, and increasing efficiency. Ideal where no electric current is available. Delivers 1700 CFM of fresh air. Uses 8" diameter flexible canvas tubing ("Ventube").

PORTAIR NO. 4 BLOWER EXHAUSTER exhausts fumes resulting from soldering, welding, tank coating, is also used in ventilating small tanks. It is designed to permit attachment of 4" flexible metal hose. Capacity: 425 CFM free air.

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COPPUS ENGINEERING CORPORATION, 121 PARK AVENUE, WORCESTER 2, MASS. Sales offices in Thomas' Register. Other "Blue Ribbon" Products in Chemical Engineering Catalog, Refinery Catalog, Best's Safety Directory and Mining Catalogs.

Please send me information on supplying fresh air to men working:

- ☐ in tanks, tank cars, drums, etc.
- ☐ in underground cable manholes
- ☐ in aeroplane fuselages, wings, etc.
- ☐ on coke ovens
- ☐ on steam-heated rubber processes
- ☐ on boiler repair jobs

COOLING:

- ☐ motors, generators, switchboards
- ☐ wires and sheets
- ☐ general man cooling
- ☐ around cracking stills
- ☐ exhausting welding fumes
- ☐ stirring up stagnant air wherever men are working or material is drying
- ☐ drying of walls, sheets, etc., after treated with coating material

Name .....

Company .....

Address .....

City .....Zone....State.....

Write here any special ventilating problem you may have { _____ _____

Circle Item No. 8—Reader Service Card

news briefs

Beryllium dust

A small machine shop designed and built especially for the machining of beryllium features a single entrance for traffic control, in-plant laundry facilities, high-velocity air movement at the cutting tools, and hooded exhausts.

Pollution and cancer

Recent newspaper publicity about the relationship between cancer of the lung and air pollution was not based on new findings. It has been noted before that city people are more susceptible to lung cancer than their country cousins. Animal experimentation reinforces the belief that polluted city air is a cause of lung cancer.

Microwave radiation

Work in progress in the Air Force indicates that the biological effects of microwave radiation depend largely on the frequencies used. There is some indication that the effects are cumulative. Researchers report the eye appears to be the most vulnerable part of the body.

Disability cost

The U. S. National Health Survey reports that Americans lose 20 days each year to illness or injury. After a full year of household interviewing throughout the country, the department reports that there were more than 400,000,000 acute illnesses. They report 47,000,000 injured seriously enough during the year to cause them to restrict their activities for a day or more or seek medical attention.

Hot reception

To give a bridal party a touch of style, the bride's parents instructed the hotel to serve flaming trays of "Cherries Jubilee." As a long file of waiters marched in, each holding his gastronomic torch aloft, the automatic sprinkler system let go and produced unexpected bridal showers.

Colored clothing code

Construction workers at the Carrier Corporation, Syracuse, N. Y., were issued bright colored shirts and jackets to identify their occupations. The colored clothes enabled foremen to call on the right man to perform a hazardous job. They also saved time in distributing manpower where it was needed, improved morale, and reduced absenteeism. Some New York City firemen are wearing coats with broad, yellow stripes. One fireman says he feels a lot safer at night fires knowing he can be seen.

CO testing

Industrial testing equipment was used to check carbon monoxide levels in Pennsylvania school buses. Pennsylvania is believed to be the only state with an official program of this type. State officials expect to expand the use of testing equipment to passenger cars and trucks. Tentative plans have been made for research on passenger cars and trucks on damp, muggy days. The first test will probably be carried out on the Pennsylvania Turnpike where people have been driving for several hours with windows closed.

Suffocation hazard

An industrial employee narrowly escaped suffocation when he reached into a storage chest for some small chips of dry ice. He felt a slight dizziness and was able to pull back out of the range of the CO_2 in time to recover. This type of accident gives no warning—the victim just blacks out.

Pipe + pants = pyrolysis

A worker in a Massachusetts plant put his pipe in his pants pocket, changed to his work clothes, hung his jacket and trousers on a hanger in the locker room, and reported for work. The blaze was under control when the fire department arrived a few minutes later.

Cities dirtier

The first comprehensive nationwide air sampling survey has shown that America's cities are getting dirtier. Anchorage, Alaska, surprisingly enough, was listed as the city with the highest amount of air pollution. Charleston, W. Va., and East Chicago, Ind., were close behind.

Jim Saul

ANSUL has introduced a new line of dry chemical fire extinguishers. We call them "D" models, and they come in 5, 10, 20 and 30 lb. sizes. **ANSUL** people have worked hard to make them the most effective extinguishers, pound for pound, dollar for dollar, that you can buy anywhere. We want to show you these new extinguishers . . . to demonstrate their effectiveness . . . to point out the precision engineering and craftsmanship that goes into every unit. Write for our new catalog or an appointment with an **ANSUL** fire protection consultant.

the "D" models are available in either red or white finish, to insure maximum visibility in any location

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Circle Item No. 10—Reader Service Card

WIRE FROM WASHINGTON

By Harry N. Rosenfield
Washington Counsel, National Safety Council

THE PROSPECTIVE return of Congress has been preceded by executive planning for legislative programs.

National Conference on Air Pollution. Called by the Surgeon General of the U. S. Public Health Service, a National Conference on Air Pollution studied the problem of contaminated air. The Department of Health, Education and Welfare estimated that air pollution costs industry and the public four billion dollars a year (others estimated 7½ billion), but that only one-third of a billion dollars was spent annually on prevention.

A persistent theme throughout the conference was the danger of diseases from "dirty" air. The Surgeon General stated that "investigators are finding a definite association between community air pollution and high mortality rates due to cancer of the respiratory tract, including the lung, cancer of the stomach and esophagus, and arteriosclerotic heart disease." To wait for "absolute proof" of this relationship, said the Surgeon General, "is to invite disaster."

Considerable attention was paid to the responsibility and alleged delay of the automobile industry in developing a device to control motor-exhaust pollution. The Department of Health, Education and Welfare revealed that about 1 out of every 14 gallons of fuel put into the nation's motor vehicles goes into the air as pollution. The automobile industry stated that exhaust cleaners were being tested, but no prediction was made as to when a commercially feasible cleaner would be perfected.

Senator Kuchel warned the conference not to scoff at "a wave of suggestions that certain types of motor fuels be prohibited by ordinance or regulation" or to ignore the suggestions for federal standards governing the permissible chemical content of auto exhausts.

Recommendations adopted by the conference included:

1. Extension of the Federal Air Pollution Control Act now scheduled to expire in 1960, and an acceptance of state and interstate control measures, where the problem extends beyond local boundaries. This was accepted by the Secretary of Health, Education and Welfare.

2. A vigorous development by industry of exhaust-system control devices, a study by the auto industry of maintenance aspects of the auto exhaust—air pollution problem, and a continuation of government research. The Public Health Service announced it was launching research studies on the auto-exhaust problem, and called on the auto industry to intensify its activities.

3. Reduction of air pollution from industrial, domestic, and municipal activities.

4. Need for increased medical and engineering research. The Department of Health, Education and Welfare announced a future conference to work out practical methods for stepped-up research activities.

5. Increased training facilities for air-pollution specialists.

Highway Traffic. The Bureau of Public Roads announced that registrations would total 68.4 million autos, trucks, and buses by the end of 1958. This is 1.9 per cent higher than 1957, but the rise is at a slower rate. All states reported increases.

The Commissioner of Public Roads noted that the fatal accident rate on controlled-access highways is only one-third that of roads which do not have control of access.

A quarterly report on the highway safety study being conducted under the Federal-Aid Highway Act of 1956 indicates concern about highway-accident statistical accuracy due to non-uniformity in definition and reporting.

In a motor carrier accident investigation, the Interstate Commerce Commission warned carriers to use tire chains and to avoid use of excessively worn tires.

Industrial Safety. The Atomic Energy Commission prescribed additional safeguards for handling nuclear material of amounts sizable enough to cause radiation accidents. The AEC now requires adequate alarm systems and emergency plans to evacuate personnel.

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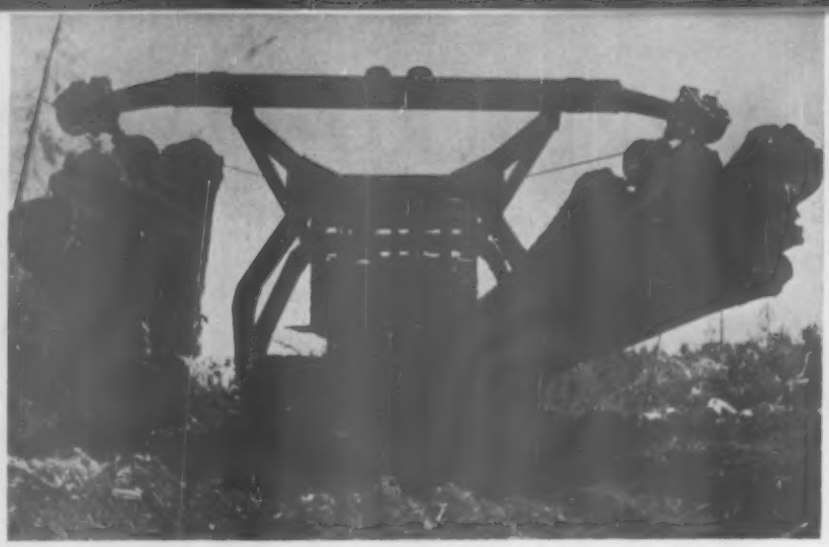
THE MONTH IN WASHINGTON

- **PHS finds link between community air pollution and high death rate from respiratory tract cancer; will research auto exhaust.**
- **1960 conference to revise International Convention for Safety of Life at Sea, International Load Lines Convention.**
- **Report expresses concern about accuracy of highway-accident statistics resulting from non-uniform reporting, definition.**
- **CAB will demand high-visibility paint for certain civilian aircraft, and plans restrictions on amateur missile firings.**



THIS OMINOUS LOOKING piece of lumbering equipment is a two-arm, 50-ton skidding-arch tractor.

In the Woods Behind the Iron Curtain

By SETH JACKSON

An American observer finds that forestry is on the move in the USSR and safety isn't forgotten

WHAT has impressed me most about Russian forestry is that country's extensive use of research to solve timber problems, professional competence of key men and women, and worker training programs, including safety. A 20-day tour in the Soviet Union, during which I talked with the minister of the timber industry, heads of research institutes, researchers, woods workers, and plain citizens, convinced me that forestry in the U. S. S. R. is on the move.

I was a member of a three-man U. S. delegation to the second session of the Joint FAO/ECE (Food and Agriculture Organization/Economic Commission for Europe) Committee on Forest Working Techniques and Training of Forest Workers. The tour consisted of a conference in Moscow and a visit through a logging area between there and Leningrad September 9-26, 1957.

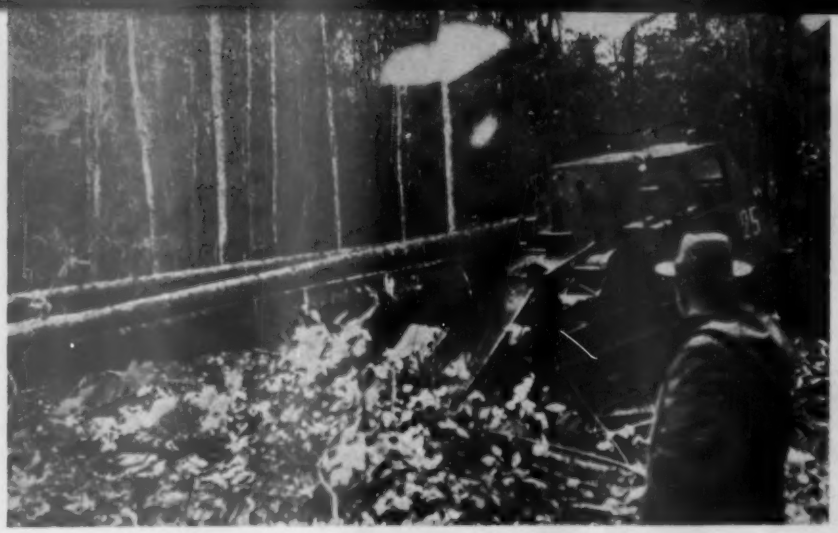
Head of the delegation was Mark Townsend of the Townsend Lumber Company, Stuttgart, Ark. The other member was Max Pinkerton of the North Memphis Lumber Company, Memphis, Tenn. Sixty-seven other delegates from 25 countries attended.

The Big Picture. As background, the U. S. S. R. covers an area of about 8,600,000 square miles. From east to west is more than 5,590 miles—twice the distance from the east to the west coast of the United States. The Soviet Union's north-south boundaries are 2,800 miles apart—almost 2,000 miles farther than from Chicago to New Orleans. That vast country is roughly three times as big as ours, and the population density is only about 23 persons per square mile compared to our 56.

Forests cover almost a third of the area. Timber volume in their forests is three times that of commercial forest land in the continental United States. However, 74 per cent of their forests are in Siberia. Most of their timber exploitation has been in European Russia, where 81 per cent of the people live. Consequently, the western forests have been severely depleted, and the trend now is to move timber operations eastward to Siberia.

U. S. DELEGATION: Seth Jackson, second from left; Mark Townsend, third from left; Max Pinkerton, extreme right.

SETH JACKSON is Administrative Officer in Charge of Safety, United States Forest Service, Washington, D. C. This article has been adapted from a paper read before the Wood Products Section on October 20, 1958, at the 46th National Safety Congress in Chicago.



MOST LOGGING was "full-tree" type. The tree is transported to electrified lower landing for trimming and cutting.

Our conference and woods tour dealt with harvesting timber rather than with forestry in general. The first week was taken up with meetings in Moscow. This was followed by a 10-day study tour, including visits in Moscow to the Scientific Institute for Mechanical and Power Research; in Leningrad to the Central Research Institute for Timber Floating, the Research Institute for the Design of Forest Transport, the Kirov Timber Technical Academy, and the Institute for Advanced Training; and two timber production units in the forests between Moscow and Leningrad.

At the Conference. The conference opened in a high-ceilinged, marble-pillared room in the Sovetskaya Hotel, where we were staying. Vice Minister of the Timber Industry G. M. Orlov set the keynote:

"We strive for more production through mechanization and better work conditions," he said. "We shall be happy to show you what we have done. In the woods we are about 80 per cent mechanized now. We want you to know about our plans. We should be very grateful for all criticisms of our systems and techniques. And we want you to help us solve the most important problem of all—the defense of peace."

E. G. Richards of the United Kingdom was elected chairman. Ivan Sudnitsin of the U.S.S.R. became first vice chairman. Professor J. M. Venet of France was second vice chairman, and I was elected secretary. The proceedings were translated into five languages through our headsets.

We got well acquainted with the

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RIGHT: Russian training poster on correct method of tree felling.

BELOW: Display of sculpture at Agriculture and Industry Fair, Moscow. Tractors and buses are included in automotive exhibit.

LOWER RIGHT: Sunday drivers are no problem in USSR. A boat ride on the Volga Canal is a popular week-end diversion.

When Snow Fell They Were Ready

An emergency storm-fighting program went into action when a blizzard hit the utility's territory

ELECTRIC companies do everything within reason to make their facilities as safe from storms as possible, and many utility firms have emergency storm-fighting programs that can be put into action at the first sign of trouble.

One such organization is the Pennsylvania Power & Light Company. In one instance, its 2,400 employees worked 252,754 man-hours in pre-planned restoration efforts during a blizzard this year and suffered only two disabling injuries—one of these from an automobile collision.

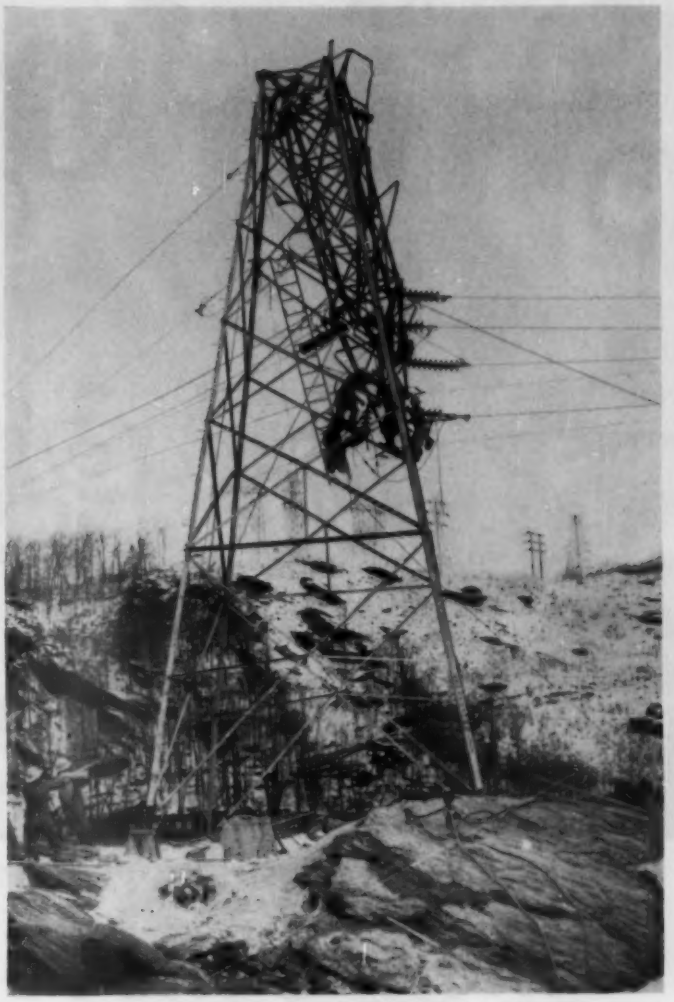
On March 20, 1958, a caprice in nature slightly increased the temperature during a heavy snowfall in the Allentown-Bethlehem and Lancaster regions of Pennsylvania. Snow became almost rainlike in consistency, and a cubic foot of the soggy flakes was found to weigh 30 lbs.—about five times the weight of ordinary snow.

Damage was heavy in *wet* snow areas, while practically non-existent where temperatures were colder. Steel towers on high-voltage circuits collapsed.

For as much as three miles in a row in some localities, every pole was damaged . . . snapped through, split, canted. Or crossarms were splintered, dangling, or down completely. Span after span of wire lay on the ground. The clinging leaden weight had humbled sections of sturdy line that only a few years back had weathered a hurricane practically undamaged. Resulting damage caused service interruptions to about 205,000 of the company's 700,000 customers.

Paradoxically, only a month earlier, snows of as much as 29 inches had blanketed the company's service territory of 10,000 square miles, and only 300 of the firm's customers experienced interruptions in electric service.

As soon as the March blizzard gave evidence of being a troublemaker, the company's emergency



TOPPLED TOWER. Crews untangle the twisted top of this transmission line tower which crumpled under pressure of wet, heavy snow.

RESTORATION work went on, even though crews had to work in snow often knee- and even hip-deep. Here, the crew is cleaning up torn wires and broken poles.

operating organization swung into operation. Personnel in the two affected divisions were called out to survey the damage and determine what was needed for restoration. Local emergency coordinating centers were established. The function of these local organizations was to receive customers' calls and dispatch trucks, men, and materials throughout the division.

The Central Emergency Organization (CEO), working through local emergency organizations, began to coordinate restoration of service. Men and materials from two unaffected divisions and two slightly affected divisions were mobilized and rushed into hard-hit areas.

Initial stages of restoration of any emergency involve the *cutting clear* of damaged facilities to prevent injury to the public and further damage to equipment. This work is usually done by forces regularly stationed in the affected area, because of their familiarity with facilities involved. Additional forces sent into the area aid local forces in renewing service.

Earliest to receive attention are hospitals, public services, and public buildings. At the same time, intensive work is going on to repair damaged *feeder* and transmission lines, the high-voltage lines that bring power to an area from generating stations. This is important, because it will do no good to restore lines leading directly to the customer, if power can't be brought into the area.

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CRUSHING WEIGHT of wet snow is indicated by this stretch of broken poles lying along a rural road in the Lancaster, Pa., area.

JOHN DIXON shows a student what to expect in the next cut.

Men to Move the Earth

By JAMES D. SAUL

"In the driver's seat" instruction makes heavy equipment operators out of recruits at the Greer Earthmoving School. Students learn to boss the big machines before they enter the construction industry

HEAVY-DUTY construction equipment is being built faster than operators can be trained. The Federal Interstate Highway Program, industrial expansion, and new residential construction all need men to operate heavy equipment. Greer Technical Institute is one of several private schools in the country that are pushing hard to close the gap. Greer's Heavy Equipment Operators Division near Braidwood, Illinois, starts a new class of four to nine students every Monday morning. Each student puts in 200 hours of intensive practical training. Response from contractors in the three years of the school's operation has been encouraging.

The school is located on 1,700 acres of worked-over strip mine. Greer leases it from Peabody Coal Company. The rough, rocky terrain makes an ideal training ground—gives students practice on challenging problems.

Equipment for the school is provided by Inter-

national Harvester, Galion, Pauling and Harnischfeger, Drott, Hough, and Seaman Gunnison. The companies loan the machinery to the school, and the school maintains and repairs it.

A special arrangement with the tire manufacturer protects the students from the hazards of heavy-duty tire repair. When they have to air the tires, they use a metal tube extension to the hose to stay out of range.

In his five-week course, a student gets a chance to work on dump trucks, crawler tractors, front-end loaders, and self-propelled scrapers. Equipment care and preventive maintenance are stressed.

Any maintenance more involved than routine servicing calls for a mechanic. An operator might replace something as simple as a hydraulic hose in the field, but he can't carry around such bulky tools as 2-in. socket wrenches. Greer trains mechanics in a separate ten-week course. Student mechanics study diesel engines, fuel injection systems, torque converters, steering systems, tractor tracks, cable controls, welding, and bulldozer rebuild.

The appearance of heavy equipment parts is deceptive. Their very size makes them look unprecisioned, but they are closely machined, and have the finest of bearings and seals.

Crane and grader operators take separate five-week courses. Anyone who has ever seen a grader gliding effortlessly along finds it hard to understand why it takes five weeks to learn to operate the machine. A look at specifications makes it easier to understand. Not only is the grader harder to operate than to watch, but the operator of the giant vehicle must work to a ½-in. tolerance. In highway work, the operator grades to a row of stakes down the center of the road. After the grader makes its final pass, a person should be able to see the tops of the stakes, but should not be able to feel them.

It takes years of experience to get that good—the school is able to teach only ditching and road maintenance in the short time it has to train grader operators.

John Ronaldo, field supervisor for the Heavy Equipment Operators Division, teaches the crane course himself. He finds that some students are awed by the size and power of the equipment, and do unpredictable things at times. Ronaldo says, "I'll tell you what happened here about three weeks ago—this student had been on the crane about a week, but all at once he got rattled and froze at the controls. He had a dragline attachment. I had him started on a sloping grade—oh, about from here to the coffee wagon away. The boom was straight up in the air when I noticed what was happening. The bucket had hit the cable sheave. He should have remembered to push his hoist lever forward. He should have kept the boom at a forty-five, too, but he had it vertical. He was at half throttle, and had plenty of time to correct."

When a new class starts on Monday morning, the first subject matter scheduled is safety do's and don't's. There is a finality about many heavy equip-

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VERN STRASSLER demonstrates with a sandbox model how an unwary operator can be catapulted from his seat if he forgets to turn the machine at the top of a hill.

MIRED in the soft ground, a scraper operator calls for a shove. Instructor gives him directions while a big dozer comes up from behind to push him out of trouble.

AL BARRA points out how track frame is reinforced to take the 13,,000-lb. pressure of the track springs. Removing and replacing the springs is a ticklish job.

FIREBALLS of light shooting toward landing area guide landing planes during mist, fog, rain or snow at New York's International (Idlewild) Airport. This system, known as the Electronic Flash Approach System (EFAS) consists of a center line row of powerful, flashing "strobeacon" lights. These are synchronized to flash in sequence, like fireballs streaking toward the landing area. Each strobeacon is installed in front of a horizontal bar of five steady-burning incandescent lamps. Bars provide incoming pilots with an "artificial horizon."

ELECTRONICS

at your service

Some of these devices are primarily for safety; others protect while improving operation

By MARSHALL E. KULBERG

ELECTRONIC safety devices are primarily designed to make an operation safer or, although designed for another purpose, help to promote the well-being of the user. And many devices made to improve an operation are also safety devices.

Electronics is defined as any device, electrical in nature, that contains or operates by non-linear active elements, such as tubes and transistors. A device for controlling the firing of a boiler using a phototube would be considered electronic, while a device using a thermocouple directly operating a relay would be considered electrical.

Electronic safety devices might be divided into four groups, according to the device's major function:

Group I—Observation. Devices to enable the operator to view processes that would otherwise be inaccessible or beyond the range of human vision.

Group II—Detection. Devices for sensing the presence of various phenomena.

Group III—Guidance. Devices for transmitting intelligence or information to an operator.

Group IV—Control. Devices for controlling processes or equipment.

Observation

Closed circuit television systems permit observation of processes in unsafe locations without exposing the observer to the hazard. These systems have been used extensively in railroad yards for observation of freight car numbers and designations, in rocket testing areas for observation of starting characteristics, in engine test cells for the reading of meters, in chemical plants or laboratories for observation of a critical process susceptible to violent reactions if not fully controlled.

This application of television has also been used to enable students to observe operations in hospitals. Dentists' schooling is now aided greatly by closed circuit television training. The *Nautilus*, on its historic North polar icecap crossing, used a closed circuit TV device pointed upward to check the underside of the ice.

A stroboscope is an electronically controlled flashing light source to enable the study of moving parts at full speed. By flashing the lamp slightly faster or slower than the speed of the object under study, a slow-motion study of the equipment can be made on the spot to find whether there are hazards to operators or deformation of parts which may lead to early failure.

Detectors

Electronic detectors for the nondestructive detection of flaws are in use in many industries, have made the use of equipment much safer, and frequently result in extending the useful life of apparatus.

In the same manner that an echo is heard when a sound wave in air bounces off a solid surface, ultrasonic sound waves (above the range of hearing—more than 20,000 cycles per second) will bounce off a discontinuity on a solid body through which the waves are transmitted and can be made to indicate the presence of cracks and blowholes.

MARSHALL E. KULBERG is Division Safety Engineer, Semiconductor Division, Sylvania Electric Products, Inc., Woburn, Mass. This article has been adapted from a paper presented at the 46th National Safety Congress, October 23, 1958.

Equipment using this principle is in constant use checking flaws in mines, crane hooks, and machine parts. Detectors passed over the surface of a mine tunnel will indicate the presence of cracks or flaws that are potential sources of roof falls. Ultrasonic detectors show the presence of subsurface cracks that may open on loading a crane hook.

Early detection of flaws makes it easier to judge when a defective piece must be taken out of service. This procedure frequently enables replacing the faulty part at the convenience of the maintenance people.

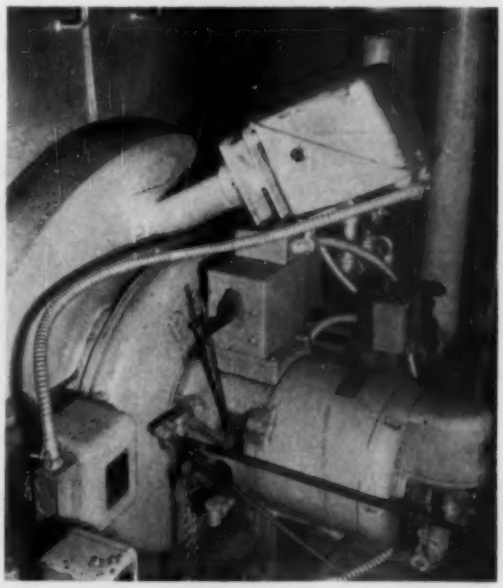
Wire ropes for hoisting are checked in a different manner. When used, the grains of the wire will become generally oriented in a single direction, if external strain is applied. By applying a magnetic power to the wire or by measuring magnetic flux around the wire, the strain can be located and the rope removed from service before failure takes place.

Foreign bodies in food are a serious hazard to the consumer and are serious to the producer from liability and customer relations standpoints. To assure a pure, clean product, the material is passed through detectors that sense the presence of any metal or other solid object, and either stop the process for hand removal of the foreign body or automatically remove the offending object.

In the production of paper, cloth, or plastics, metal objects would damage equipment and might injure operators unless removed before critical stages of production are reached. To eliminate this possibility, all logs fed to the pulpers in some pulp mills are passed through detectors that indicate the presence of any metal object (saw teeth, nails, wedges) and removes those logs. The detectors are electronic circuits, which are upset by the presence of metal objects but are unaffected by non-metals.

Unbalance of rotating machinery not only causes rapid wear of the machinery but also strains the machine so early failure is possible. Rotating machinery components are frequently checked electronically for unbalance before installation. One of the easiest methods is to chalk indication numbers on the rotating part, rotate the piece, detect the unbalance, and flash a lamp at the point of maximum displacement.

This will cause the number at the point of unbalance to appear on the part, while associate equipment will indicate the amount of unbalance. The part is removed from the balancer; metal is removed or added, where indicated; and the unit is rechecked. Your wheel balance on your car is a common example of this technique.



BOILER protected by phototube. Tube is focused into firebox, detects presence of pilot flame and main flame. It functions to prevent misfiring in case of failure of any part of the system.

PRESS CONTROL. When operator's hands break light beam, the press cannot start. A time delay circuit is used to provide the "failsafe" feature.

In **hazard detection,** electronic devices are used constantly in areas where the generation of explosive mixtures of gases or vapors could be disastrous. Continuously operated detectors with alarms are used in mines to guard against the presence of methane, and in chemical plants to avoid generation of many explosive mixtures.

Electronic mine detectors have saved many lives in war by per-

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Fire Fighting — Ancient and Modern

As cities grew and industrial processes became more complex, man had to find better methods of protecting life and property

FIRE FIGHTING dates back to the time when man first learned to kindle a blaze to warm his damp, chilly cave. He soon found that fire was sometimes an unruly servant and had to develop methods for its control.

Historical records frequently mention fire fighting methods. The first hand-operated fire engine mentioned in history was invented by an Egyptian, Heron, about 200 B. C. This device, as described by historians, seems to have been similar in principle to the hand engines used in this country just prior to the Civil War.

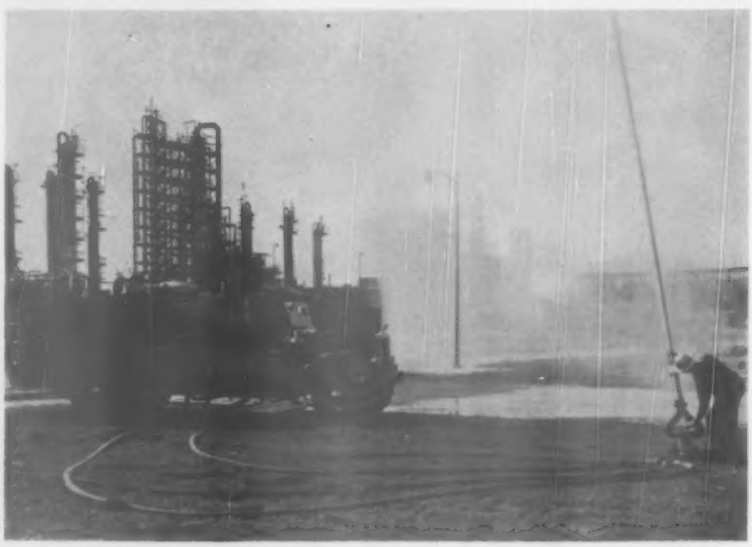
Even before Heron's time, man had been looking for something more effective than hand buckets. When cities were attacked, the besiegers often shot flaming arrows to points beyond reach of bucket brigades. So machines to throw water on distant spots became a necessity.

The first pump-type machine on record is mentioned in a work of Apollodorus (440 B. C.). This device used the entrails of an ox connected to a water-filled bag. The bag was compressed and water forced through the entrails. Nozzle pressure and burst strength must have been insignificant.

Fire engines were used extensively in Rome but historians relate that the ancient firemen frequently created as much disturbance as the fires. These were the first fire companies in the world. Bitter rivalries built up among them and innumerable rows developed.

No accurate record is available on methods of fire fighting for 13 centuries after the fall of the Roman Empire. Fire engines were forgotten during the Middle Ages and apparently the only devices for fire fighting were buckets and portable hand pumps which were operated like king-size syringes.

THE OLD HAND PUMPER of colonial times remained standard equipment until the Civil War. Some of them were still in use in villages in the early years of this century. And how big the youngsters felt when they were able to help by carrying buckets of water to fill the tank, and sometimes even to man the pumps.



CITIES AND INDUSTRIES could not have grown to their present proportions without fire protection methods and equipment. Motorized fire trucks with powerful pumps, versatile nozzles, specialized extinguishers, and other fire fighting accessories get to the blaze quickly. An important addition to fire protection equipment is "Dacron" hose which has high bursting strength and is highly resistant to rot and mildew.

It is easy to understand why fire destroyed almost all of London in 1666. In a brief description of the equipment then used for protection, we learn that "the smaller ones (syringes) were about 2½ ft. long and 1½ in. in diameter, the bore of the nozzle being half an inch. Three men were required to work each: two, one on each side, grasped the cylinder with one hand and the nozzle with the other, while the third one worked the piston. Those who held the instrument plunged the nozzle into a vessel of water, the operator then drew back the piston and thus charged the cylinder; and when it was raised by the bearers and in the required position, he pushed in the piston and forced, or rather endeavored to force, the contents on the fire."

Building accounts of the city of Augsburg, Germany, mention use of some kind of fire engines as early as 1518. Their construction is not known but they were believed to be large syringes mounted on carriages.

German inventors have received credit for the first pumping engines of modern times, the first unit being at Nuernberg in 1656.

Beckman, a writer of that era, states: "This engine is much practiced in Germany, and it hath been seen what great and ready help it may bring; for although the fire be 40 feet high, the said engine shall there cast its water by help of four or five men lifting up and putting down a long handle, in the form of a lever, where the handle of the pump is fastened; there are two suckers (valves) within it, one below to open when the handle is lifted up, and to shut when it is put down; and another to open to let out the water; and at the end of said engine there is a man which holds the copper pipe, turning it to and again to the place where the fire shall be."

Fire hose. The invention of hose has been considered the biggest forward step in the history of fire fighting. Sewn leather hose was introduced at Amsterdam, Holland, in 1672 by John and Nicholas Van der Heide, superintendents of the city's fire apparatus. Hose was made in 50-ft. lengths with brass screws fitted to the ends, so that any number could be quickly connected. It was used principally to relay water from one hand-operated pumping engine to another, not in engine-to-fire operations.

The sewn leather hose was a great boon to fire fighters although it was susceptible to rotting and cracking. This variety of hose was also used in America in colonial times.

In the early nineteenth century, copper rivets replaced hand stitching in leather hose and this construction became standard until rubber-lined fabric fire hose was introduced in 1859. This hose was made from a flat belting coated with rubber on one side. The material was rolled to make a tube, with the rubber on the inside, and the seam riveted.

Seamless, cotton-jacketed hose, substantially as we know it today, resulted from the work of B. L. Stover, who devised in 1877 a circular loom for manufacturing cotton jacketing in the form of a seamless tube. This cotton-jacketed, rubber-lined hose prevailed without major construction changes for more than 60 years.

Some authorities claim that progress in fire fighting equipment over the last six years has been greater than in the last 300 years. Of particular significance is a polyester fiber called "Dacron."

Because it provides improved strength and flexibility, and reduced weight, continuous filament yarn of "Dacron" has been accepted as the load-carrying filler cord in standard municipal fire hose to provide superior burst strength when used in conjunction with cotton warp cords.

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EXPERIENCE

EXPERIENCE can make or break you. But most folks don't keep theirs up to date—or ignore it once they've got it.

Modern experiences teach us:

A good credit rating is better than cash.

It's what's up front that counts.

When all else fails, blame tired blood.

Your best friend will run you down on the road.

Don't forget the green stamps.

If you trade your old car, it won't be worth as much as you still owe on it.

Tom Dooley shouldn't have met her on the mountain.

A ruined woman isn't really ruined.

Stay at work. If you leave, you're liable to get knocked off accidentally.

When you'll accept nothing but the best, you usually get nothing.

When the spouse fixes an honest-to-goodness home-cooked meal—something else is cooking.

You don't hardly need the two feet of the car that won't fit in the garage.

Doctors say, "Do it yourself should be changed to Do it *to* yourself!"

When arms become too short to read the paper and tie the shoestrings, look out for the crest of the hill.

It really doesn't ruin a kid's personality to discipline him.

Yet, we still don't know where the yellow went.

Some experiences teach us more subtly than others. Many things we learn by experience, we shouldn't learn at all. Many things they used to call sin, they now call experience.

It isn't good experience to be injured in an accident.

You can't live high on the hog if you can't bring home the bacon.

ROBERT D. GIDEL

With us

Safety Is a Bread and Butter Issue

By keeping members free from disability, a union protects their earning and buying power

By L. S. BUCKMASTER

WHEN workers band together to form a labor union, they're prompted by a desire to improve their wages and working conditions.

In the language of the shop, that's *bread-and-butter* unionism. Workers who through union organization and bargaining can improve their wages and working conditions will be able to buy and enjoy more bread and butter and other necessities.

In a real sense the United Rubber, Cork, Linoleum and Plastic Workers of America (URW) has long felt there is nothing more vital than safeguarding the health and welfare of our members—vital to themselves, to their families, to the community. And by keeping our members from injury or disease, we protect their earning and buying power.

Applying this philosophy, our union has joined with the rest of organized labor to push for passage of adequate workmen's compensation laws to provide for a worker and his family in case of an on-the-job accident. Incidentally, our union was one of the pioneers in negotiating hospital and surgical insurance coverage for workers and their families.

The URW is proud that it also was one of the forerunners in the field of safety and workmen's compensation. But we believe our safety and workmen's compensation program must be constantly improved, if we are to represent our members effectively in their need to have full protection, in case they suffer injuries in industrial accidents.

Thirteen years ago, an international staff representative was named to establish a program dealing with safety and workmen's compensation. This program has benefited thousands of our members by bringing about better safety and sanitary and health conditions. We believe it has saved many lives and protected thousands from crippling injuries and disease.

Our primary task in this field is to prevent as many injuries and deaths as possible by eliminating unsafe working conditions in our plants. Our program is not one operated in puppet-like fashion from an ivory tower. The real job must be done on the local union level, and certainly the 255 URW local unions that have established safety committees deserve credit for progress made.

Briefly, here are various highlights of the URW program:

1. Safety and compensation committees are set up in the local unions.

L. S. BUCKMASTER is General President, United Rubber, Cork, Linoleum and Plastic Workers of America, AFL-CIO, Akron, Ohio.

UNION-MANAGEMENT safety committee had a conspicuous part in establishing new record for rubber industry at U. S. Rubber Co., Mishawaka, Ind. Seated, left to right: Scott Fore, Sam Shapiro, Russell Dick, Jack Bollinger. Standing: Al Gatchell (Safety Dept.), Bill Washburn, Leonard Hupert, Jr., and Von Cork, safety director.

2. Managements are encouraged and requested to appoint representatives to serve on joint labor-management safety committees. (In many instances, such committees are established by contract.)

3. Provisions on safety and compensation are negotiated in collective bargaining agreements.

4. Weekly safety inspection trips are made by these committees throughout plants. Special inspections are conducted, when necessary.

5. Joint weekly safety committee meetings are held to discuss all plant safety problems.

6. Minutes are kept on all safety meetings.

7. Members of the committees are given copies of the minutes of all safety meetings.

8. Safety committees work out educational programs for shop stewards, supervisors, and factory employees.

9. Union members of the safety committees cooperate with management members on any type of award system to be planned for the department with the fewest accidents or injuries.

10. Union safety committees are urged to become thoroughly familiar with the state division of safety departments and the personnel responsible for the administration of those departments.

TOPICS COVERED IN SAFETY CLINICS

1. Why Union Safety Courses
2. Magnitude of Accident Waste
3. Significance of This Waste
4. Accidents Are Preventable
5. How Accidents Are Prevented
6. Management Responsibility
7. Union Responsibility
8. Basic Union Policy
9. Development of the Safety Movement
10. Present Status of the Safety Movement
11. Accident Costs
12. Injury Rates
13. Accident Sources and Causes
14. Basis of an Accident
15. Finding and Correcting the Hazards
16. Developing Safety and Adequate Behavior
17. Safety Legislation
18. Safety Codes
19. Federal vs. State Action
20. How to Make Use of Laws and Codes
21. Safety Organization
    a. Safety Committees
    b. Agreed-Upon Basic Policy
    c. Function
    d. Procedure
22. Why Industrial Safety Is Important
23. Making Safety Inspections
24. Accident Reports and Records
25. Making an Effective Safety Speech
26. Conducting a Safety Meeting

In conducting this program, the URW has developed and operated safety and compensation clinics throughout the seven districts in the international union. A typical safety clinic, covering subjects in a range from the high cost of accidents to safety legislation, sometimes continues for two or three days. Recognizing the value of such gatherings, local unions pay the wages lost by members attending. Between 8 and 10 of these clinics, involving many local union representatives, are held in our organization each year.

The stress, as always, is on *preventing* accidents. Of equal importance is that phase of *accident investigation* which leads to the finding and correcting of the hazard that caused or may cause accidents.

We believe these clinics serve a real purpose in developing and training our safety committees in

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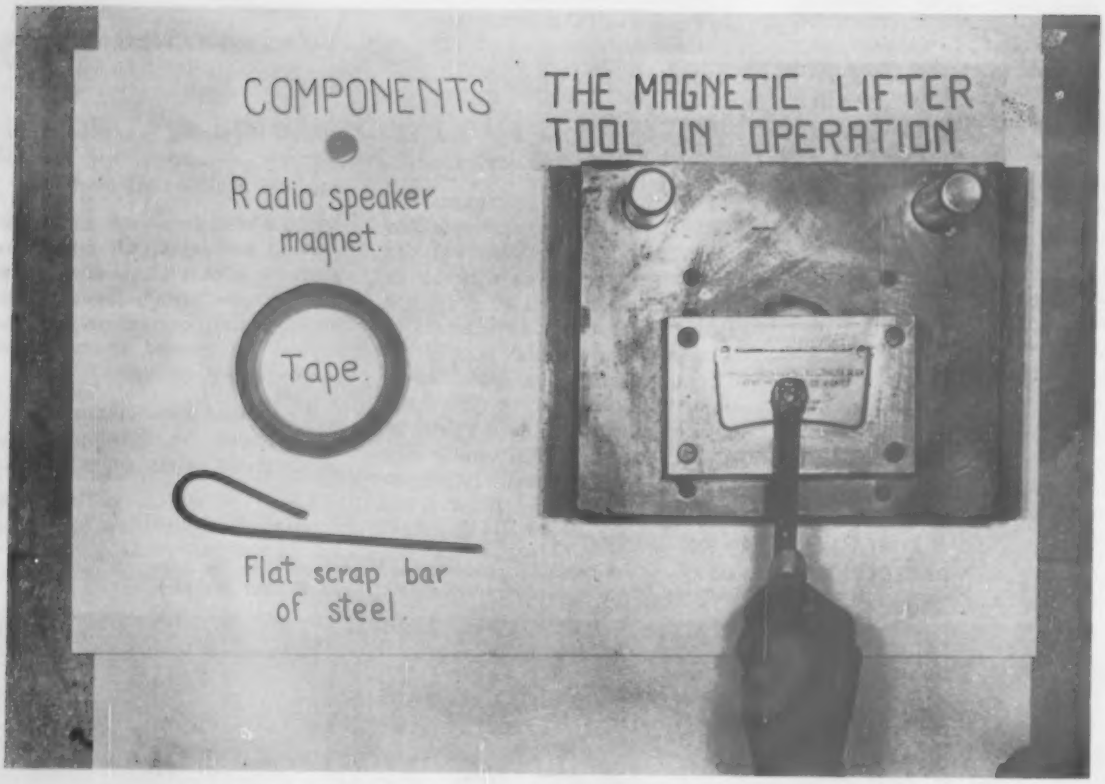
WORKSHOP CLINIC on safety and compensation conducted at Columbus, Ohio, by John Kumpel, international safety and compensation representative, United Rubber Workers.

IDEAS THAT WORKED

Devices and Ideas to Help Your Safety Program

By Arthur S. Kelly, Industrial Department, NSC

Keeping Hands Out of Power Presses



Safety Gets a Lift

A radio speaker magnet, some tape, and a flat scrap bar of steel are the components of an effective, homemade hand tool for feeding a power press. This economical lifter consists of a small magnet taped to the end of a shaped piece of flat steel bar or strap.

Submitted by Enrique Muller, Manufacturea General Electric, Mexico City, Mexico.

LAST MONTH'S WINNER

The winning idea in the December issue was the item "Everybody Wins." The idea was a variation of the old time-killer game Tic-Tac-Toe. Employees playing the game divided into two teams—the "X" team and the "O" team. Each of the nine blocks on the playing board represents a safety category. A correct answer to a question in a certain category allows a player to put his "X" or "O" over that block.

Rotary File Counterweight

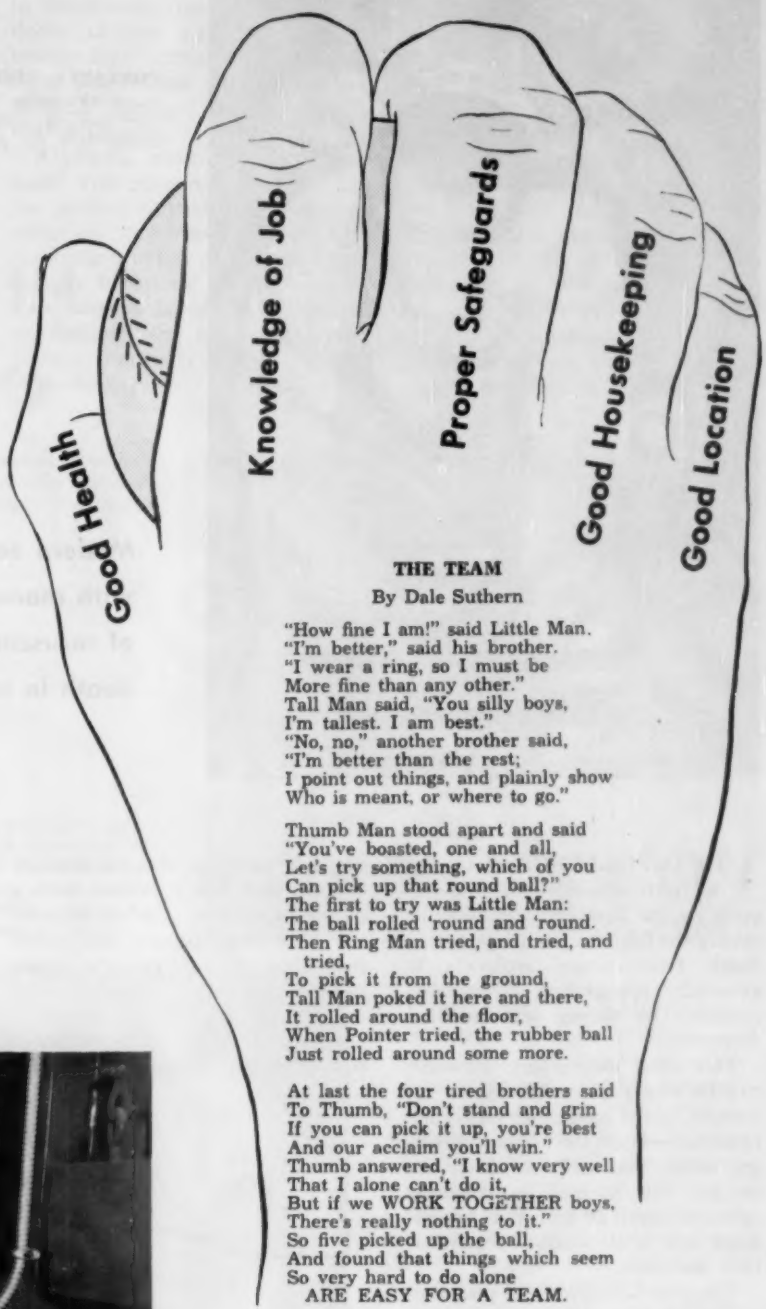
Mr. George Opre, supervisor, Publications Staff, Sperry Gyroscope Company, Suntington Station, New York, submitted an idea which is difficult to illustrate. It concerns the floor model rotary file found in many offices. When a file tray is removed, the wheel is difficult to turn because of the state of unbalance. It can be locked in this unbalanced position, but an unsuspecting person releasing the brake can start the wheel spinning out of control with the possibility of hands or clothing being caught in the whirling files.

To prevent this happening, Mr. Opre designed a counterweight which can be inserted in place of the removed tray. In this way the wheel balance is maintained and the hazard eliminated.

Barring Accidents

There is no chance that a crane equipped with the safety switch shown here will move laterally from the access platform as a person is stepping into the cab. As the illustration shows, the bar must be raised before a person can enter the cab. Raising the bar activates the switch lever, which is on a spring and opens the bridge control circuit controlling lateral movement of the crane.

Teamwork Appeal



THE TEAM

By Dale Suthern

"How fine I am!" said Little Man.
"I'm better," said his brother.
"I wear a ring, so I must be
More fine than any other."
Tall Man said, "You silly boys,
I'm tallest. I am best."
"No, no," another brother said,
"I'm better than the rest;
I point out things, and plainly show
Who is meant, or where to go."

Thumb Man stood apart and said
"You've boasted, one and all,
Let's try something, which of you
Can pick up that round ball?"
The first to try was Little Man:
The ball rolled 'round and 'round.
Then Ring Man tried, and tried, and tried,
To pick it from the ground,
Tall Man poked it here and there,
It rolled around the floor,
When Pointer tried, the rubber ball
Just rolled around some more.

At last the four tired brothers said
To Thumb, "Don't stand and grin
If you can pick it up, you're best
And our acclaim you'll win."
Thumb answered, "I know very well
That I alone can't do it,
But if we WORK TOGETHER boys,
There's really nothing to it."
So five picked up the ball,
And found that things which seem
So very hard to do alone
ARE EASY FOR A TEAM.

Cooperation Poster

The drawing above, and the poem, were submitted by Elaine Heft, plant nurse at Wales-Strippit, Inc., of Akron, New York.

Mrs. Heft has used the idea to spur interest in cooperative endeavors such as fund-raising. She suggests using it in poster form, as shown here, to inspire closer-working safety committee activity.

PORTABLE RESUSCITATOR strapped on rescuer's back is valuable when victim is in an inaccessible location. Rescuer can crawl through narrow spaces, climb ladders with hands free for removing debris and rendering first aid.

LIFE-SAVING OXYGEN

Modern techniques of applying it with manual and mechanical methods of resuscitation have turned back death in many cases of asphyxia

By WILLIAM E. DOERING

THE IMPORTANCE of the immediate administration of oxygen as the first consideration in saving the life of an employee near death from acute asphyxia is generally recognized throughout industry by safety and medical directors.

This vital emergency measure can be easily provided by an industrial plant having an easily accessible resuscitator, in top working order and with an adequate oxygen supply, and an available operator familiar with the resuscitator and with manual resuscitation methods.

There are a number of potential causes of asphyxiation to which the average industrial employee is subject at his job. The most common are smoke inhalation during a fire, and electric shock. Even a mild electric shock, usually shrugged off by a healthy employee, can paralyze the respiratory centers and kill a person with a cardiac condition. Carbon monoxide poisoning, fumes, and other poisonous or asphyxiating gases are other common causes. Drowning is also a potential danger.

Certain fumes, such as oxides of nitrogen, can produce fatal pulmonary edema several hours after exposure, although the employee may not be aware of much discomfort until the edema has begun. (Pulmonary edema is a condition where fluid leaves the blood capillaries and enters the lung air cells, actually drowning the patient.)

PROPER PREPARATION of patient for resuscitation will help secure an open path to the lungs. Following procedure is recommended: (1) Remove false teeth or other foreign objects such as gum or tobacco from mouth. (2) Place patient in supine position with pillow or folded blanket under shoulders. (3) Cover with blanket for body warmth. (4) Check for leaks around face mask caused by facial contours or injuries.

WILLIAM E. DOERING is Medical Equipment Research Supervisor for the National Cylinder Gas Division of Chemetron Corporation, Chicago.

In addition, there are a number of causes unrelated to the employee's job. Many workers suffer from cardiac conditions, high blood pressure, circulatory ailments, asthma, emphysema, and other ailments that make them asphyxia risks.

In critical asphyxia, breathing stops completely and the vital centers of the victim's body rapidly become deprived of the oxygen required to maintain life. There is no facility for storing oxygen anywhere in the body, even though it is absolutely essential for the maintenance of life. Therefore, resuscitation must be administered immediately and a physician summoned. Any delay in treatment may result in the death of the patient; approximately eight minutes of total oxygen deprivation will cause permanent damage to his central nervous system.

Asphyxia should not be confused with unconsciousness. When the patient continues to breathe, although unconscious, artificial respiration is not necessary. Even though breathing during unconsciousness is laborious, irregular, or shallow, the indicated treatment is normally simple oxygen inhalation.

It is now generally believed that the most effective therapy technique for asphyxia is the administration of oxygen through a resuscitator that provides positive and negative pressure. Such equipment actually causes the patient to breathe, supplies pure oxygen during the inhalation phase, and automatically exhales for him.

When the patient begins to breathe by himself, the resuscitator can be used as an oxygen inhalator. This type of resuscitator is most common in hospitals, industrial plants, and first aid and rescue services.

PIPED SYSTEMS provide a convenient method of supplying oxygen to emergency rooms. For resuscitator operation, the hose assembly is inserted in the oxygen wall outlet.

OXYGEN administered through a positive-negative pressure resuscitator is an effective therapy technique for asphyxia. Portable resuscitators should be available to potentially hazardous areas. Because immediate action is vital, manual resuscitation should be applied while waiting for apparatus. Delay may result in the patient's death.

The well designed piece of equipment is safe, effective, and simple to operate in a critical emergency. It should automatically adjust to the volume of the patient's lungs and instantly signal to the operator if the patient's throat or trachea is obstructed and oxygen is not reaching the lungs. Safety release valves should make it impossible for the patient's lungs to receive any pressure beyond a safe amount. This resuscitator can be applied instantly through a mask over the mouth and nose.

Preparation of Patient. A resuscitator or any method of artificial respiration is completely useless, if oxygen cannot reach the patient's lungs because of obstructed passageways. Proper

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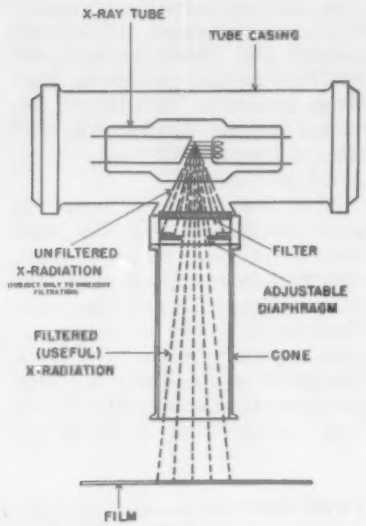
How Much Radiation Can We Take?

By BEVERLY L. VOSBURGH, M.D.
and DAVID S. GOODMAN

Like the surgeon's knife, x-ray can be curative or lethal. Here's a summary of exposure studies



UNFILTERED, unconfined x-ray beams result in maximum dosage to patient, much of it unnecessary for a good diagnostic film. Use of cone or diaphragm, or both, confine beam to exact area being examined. Beam is further reduced in intensity by filter which screens out useless soft rays.

←

MIRROR-OPTICS, of the kind used to intensify the meager light from distant stars in giant telescopes, can cut exposures in routine chest screening by an estimated 75 per cent.

IN JUNE 1956, the National Academy of Sciences made its now-famous pronouncements about the genetic hazards of radiation.

In a few words, geneticists had thus put their colleagues and the rest of the world on notice that 10 roentgens to the gonads was a reasonable 30-year limit to set on medical x-ray exposure.

The report, however, failed to clarify some things. Among them was the fact that gonadal exposure is not an individual, but a mass problem. True, it can be broken down to an individual level, as the NAS did in its report, but it works out only in terms of contiguous groups of 1,000,000 or more. Hence, when supplementing the NAS report, the National Committee on Radiation Protection about 6 months later, expressed its 30-year limitations on medical x-ray in terms of 10,000,000 roentgens per 1,000,000 population.

With only about 3 roentgens now being used by diagnostic and therapeutic radiology together in 30 years—by the NAS own computations—we have approximately a 7-roentgen leeway. That seems like a good margin of safety that should be retained if reasonable care is exercised.

Here is the conclusion reached by Paul C. Hodges, M.D., Chicago radiologist, writing in the *Journal of the American Medical Association*, February 8, 1958, after an extensive study of the x-ray exposure problem:

"Unquestionably, we should do everything possible to reduce the amount of radiation received by a patient's gonads and other tissues in connection with diagnostic x-raying. But as the evidence accumulates, it becomes clear that, with the possible exception of those examinations in which the ovary or testis inevitably lies in the direct beam, diagnostic radiology, even as it is being practiced today by qualified radiologists, is not contributing 30-year gonadal doses that are significant relative to background."

Among Dr. Hodges' findings was a most interesting figure on the added gonadal exposure one

DR. B. L. VOSBURGH is Consultant—Health and Hygiene, General Electric Company, Schenectady, N.Y. DAVID S. GOODMAN is with X-Ray Department, General Electric Company, Milwaukee, Wis.

ADDITIONAL protection to patient during chest or other upper-body x-rays can be provided by leaded rubber aprons serving as gonadal shields.

Ten Ways to Minimize Patient Exposures In Diagnostic Radiology:

1. **Use beam filter to screen out useless non-penetrating radiation wavelengths.**
2. **Use diaphragm to confine beam to area being examined.**
3. **Use mirror-optic equipment for routine screening x-ray programs, to reduce exposure by factor of 75%.**
4. **Use infant-restraining devices to reduce number of retakes required due to patient movement.**
5. **Use faster films now available, which reduce exposure factors as much as 40%.**
6. **Use faster intensifying screens with the x-ray films to further reduce exposure factors.**
7. **Use highest voltage consistent with the contrast needed for diagnosis, which permits lower current values and exposure time and hence, reduced roentgen output.**
8. **Use photo-timing devices, which automatically end the exposure when the desired film density has been reached. This prevents under-and-over-exposures that often require retakes.**
9. **Use gonadal shielding, which in some examinations, can significantly reduce gonadal exposure.**
10. **Use x-ray image intensification devices to reduce exposures during fluoroscopy.**

would receive by the simple act of moving from a wooden house into a brick or concrete house. Since the earth itself contains slight traces of radioactive elements, almost any earthy material used in home building delivers a minute dosage of radiation similar to x-radiation. This figure, over 30 years, amounts to about 1 whole roentgen.

By comparison, if one had the recommended dental bite-wing pair of x-rays twice a year, plus the recommended chest x-ray film once a year as part of his general checkup, he would (over a period of 30 years) receive less than 1/20th roentgen!

Another physician, (Dr. William Lea, director of the Industrial Hygiene Division, Wisconsin State Board of Health), studying the problem and looking for comparisons, noted that the "stray radiation dose to areas of the body other than the chest, during a typical chest x-ray, is less than 1/1,000th of a roentgen—which is about equal to what a person would receive in background radiation just by *living* 3½ days."

These comparisons are important in order to put the matter of gonadal exposure in its proper perspective.

Why the emphasis on "gonadal" exposure? Why aren't we so worried about whole-body exposures, or body-part exposure? Whole-body exposure is a rare thing—used in medicine by some radiologists only in treating certain forms of leukemia. It is constantly received in minute amounts from background radiation, or it might be suffered during a nuclear incident, or exposure to fall-out.

Body-part exposure is much less hazardous than whole-body, since small areas of tissue, except

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Table I. Comparison Between *Gonadal* and *Body-Part* Exposures—Showing Wide Disparity

	Reported Gonadal Exposure (Roentgens)		Reported Exposure to Body-Part Being X-Rayed (Roentgens)
Conventional chest x-ray using 14x17" film	0.0012	(x40)	0.048
Miniature-film x-ray (photo-fluorogram) (using conventional lens system	0.0080	(x94)	0.7500
Miniature-film x-ray (photo-fluorogram) (using mirror-optic lens system	0.0015	(x93)	0.1400
Dental x-rays (bite-wings)	0.0004	(x500)	0.200

FILTER in beam of dental x-ray unit screens out soft, useless rays.

(Fiction)

THE DIARY OF A SAFETY ENGINEER

The heart attack that forced our Safety Engineer to delegate inspection duties averts a possible disaster

Learning the Hard Way

By BILL ANDREWS

December 31, 1958

WHEN I FIRST HEARD I was going to have to slow down on the job because of a bad heart, I was plenty discouraged but not despairing.

I saw I could function after a fashion by delegating more leg work to my two assistants. I was conceited enough to think I had enough to offer in the way of intelligence, information and training to make me worth my salary even under the restrictions imposed by my physical condition.

But it certainly never occurred to me that I'd have occasion to be grateful for a bad heart. I don't suppose I am, really, but—well, here's what happened this week:

I decided Monday to stay close to the office this week, since the weather was rotten and I wanted to get out my annual report. I skipped even the minimal personal shop inspections that I've reserved to myself. I let Lee replace me in a couple of training sessions, and I finished the basic framework of my annual report by Monday afternoon, subject, of course, to insertion of the final December figures when the month ends.

Usually I'm batting away at the annual report until New Year's Eve, but now I was through early, and I could read over what I had written thoughtfully.

That was profitable, for I was able to see some weaknesses in my presentation, and to rewrite them, and even do a little more thorough statistical analysis.

Tuesday I sat down with my assistants and revised their work schedules in the light of the accident analysis in the report. I won't go into details, but the significant point is that I doubled up their inspection time in three establishments on the project where we've had bad situations and bad experience. To do this required me to cut down their time elsewhere, and I made the cuts in two plants which have really been on the ball lately.

That's a small thing to do—to look at a table and juggle subordinates' work schedules in the light of the data there.

But this morning that very small thing paid off.

At 8:30 Lee called me from the Lottry plant in Section 7-G, where the analysis had led me to assign him to extra inspection. Lee was excited, almost shouting into the phone, "Boss, can you come down here? There's a dangerous situation, and the foreman isn't being cooperative."

"What's the trouble?" I asked.

"They've been building some partitions. There are shavings and sawdust all over the place—near as I can make out, the maintenance men went on a drunk Christmas and haven't gotten back yet. Then there's lumber stacked around the shop, so truckers have a hard time getting through the aisles. On top of that, something's wrong with the water line feeding the sprinkler—it's frozen, I think."

"Get the foreman to work on that line pronto," I said.

"Boss," Lee wailed, "this guy won't listen to me. He's about ready to order me off the floor, if I don't shut up. Seems he's trying to get out a rush order, and everything is slowed up by the construction work as it is, and he'll be damned if he'll waste time hunting up a plumber because I'm a nervous old maid. You'd better come down and talk to him."

"Okay," I said, "I'll be right down." I hung up and got my hat and coat. Just then my other assistant came in. I told him briefly what was up and started striding for the door in a hurry. Then he spoke: "Boss, isn't there some other way to handle this? It's bit-

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A NATIONAL SAFETY COUNCIL
TECHNICAL SERVICE

DATA SHEET D-471

HYDRAULIC FLUIDS

Published by National Safety Council
425 North Michigan Avenue, Chicago 11

1. In a hydraulic system, pressure is transferred through a liquid medium. Because of their ease of control, flexibility, and light weight, hydraulic systems are becoming more and more important to industry as automation increases.

Types of Hydraulic Fluids

2. Early hydraulic equipment used water as the hydraulic medium, but because of its corrosive effect on metallic parts of machines and lack of lubricity, it was replaced by oil.

3. The commonly used mineral oils are available at most oil companies. These oils are refined to have viscosity and lubricity required in a hydraulic fluid. Most of them also contain oxidation inhibitors. Their flash points range from 350 F to 600 F, and their autoignition temperatures from 600 F to 750 F.

4. Water containing small percentages of soluble oil to reduce corrosion is sometimes used as a hydraulic fluid. Although these soluble oil emulsions are relatively non-flammable, they have only limited use as hydraulic fluids because of their low viscosity and poor lubricity.

5. Fire-resistant* hydraulic fluids are of three general types:

a. Water-glycol or aqueous-type fluids, which consist of up to 50 per cent water combined with a glycol, a water soluble thickener, and various additives to increase oiliness and to

*Throughout this data sheet, the term "fire-resistant" as used with reference to hydraulic fluids indicates only that a hydraulic fluid resists combustion and does not propagate flame when ignited.

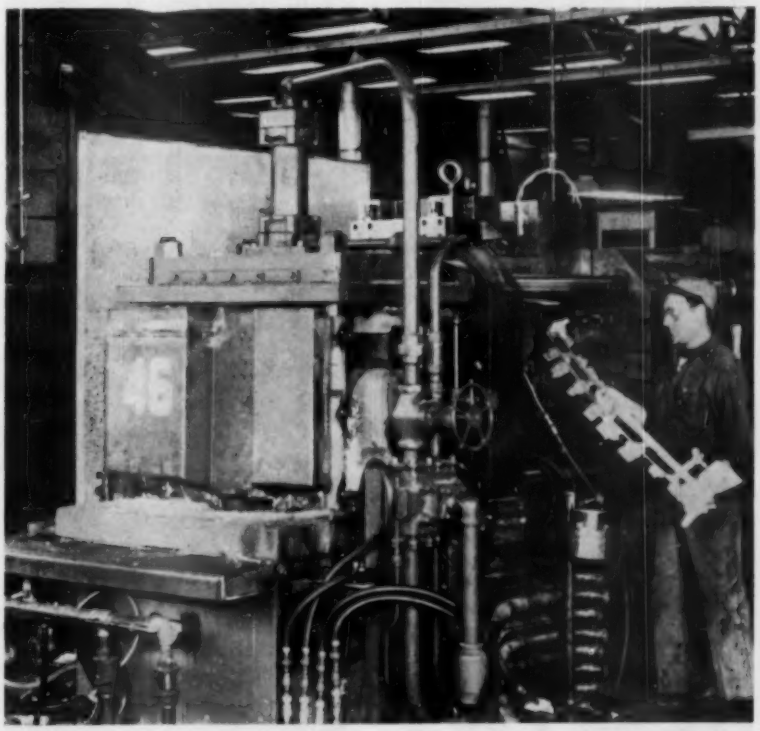

Figure 1. Use of fire-resistant hydraulic fluids to power this die-casting machine greatly reduces the fire hazard in the event of line rupture. (Courtesy Union Carbide Chemicals Co.)

inhibit corrosion. If the proper percentage is maintained, the water content assures nonflammability.

b. Nonaqueous or synthetic fluids, which are generally the phosphate-base type. Chlorinated hydrocarbons have also been used, alone or in combination with certain phosphate esters.

c. Water-in-oil emulsions, which are dispersions of water in a continuous phase of oil (an intimate mixture of oil and water).

6. The water-containing groups are usually less expensive and easier on packings than is the synthetic type, but the latter will withstand higher temperatures and has a better wear factor in some types of pumps. Before a choice is made among the three types, all the variables must be known. The technical representative of the supplier should then be able to make sound recommendations which the user can safely follow.

Uses

7. Hydraulic fluids are used in die-casting and plastic-molding machines, automatic welding equipment, machine tools such as presses, shears, and riveters, hydraulic couplings, lift trucks, heat-treating furnace door mechanisms, melting furnace tilting units, automatic control units of all types, and many other applications.

8. Water containing soluble oil is used in hydraulic systems on elevators, large presses, and extruding machines. Some manufacturing concerns have used water and 2 per cent soluble oil in die-casting machines with good results. The machines using this mixture have specially designed pumps, valves, packings, piston rings, and clearances.

9. Flammable hydraulic fluids, particularly petroleum oils, will probably continue to be widely used because most hydraulic equipment now available has been designed for their use and because they have excellent characteristics and are relatively low in cost. However, no source of ignition or high temperature should be permitted where these fluids are used.

Hazards

10. In recent years, the most serious hazard in the use of hydraulic oils has been that of fire, sometimes involving serious or fatal burns to employees and extensive property loss. Under pressures ranging from 150 psi (pounds per square inch) to more than 5,000 psi, oil from a broken fitting or leak is discharged in the form of a spray or mist. If this spray or mist comes in contact with a source of ignition, serious fires can result. As long as the oil is confined within the hydraulic system, the hazard is at a minimum.

11. Where there are open flames or other sources of heat, such as open pots or tanks of molten metal, it is imperative that fire-resistant fluids be used. If the hydraulic systems are well designed and properly installed, these fluids will perform efficiently.

12. Most hydraulic fires have been caused by failure of the hydraulic system because of the high oil pressures in constant movement, coupled with ignition sources in the form of hot surfaces, or open flames, or faulty electrical conditions. Fires have occurred when high-pressure piping was disconnected by mistake while under pressure.

13. Fire-resistant hydraulic fluids present no fire hazard. However, if water-base fluids should lose a major portion of their water content, they will burn.

14. High-pressure pipe with welded or threaded joints, steel and copper tubing, and reinforced neoprene hose are used at pressures ranging up to 2,500 psi. The principal causes of oil being released from the hydraulic system are:

a. Failure of the piping (particularly at the threaded section).
b. Failure of the valves and gaskets or fittings.
c. Rupture of the flexible hose.

15. Lack of adequate supports and anchorage to prevent vibration and other movement of the piping has sometimes been a factor in these failures. Likewise, repeated flexing and abrasion of the hose against other hose or parts of the machine have created weak spots which eventually resulted in failure.

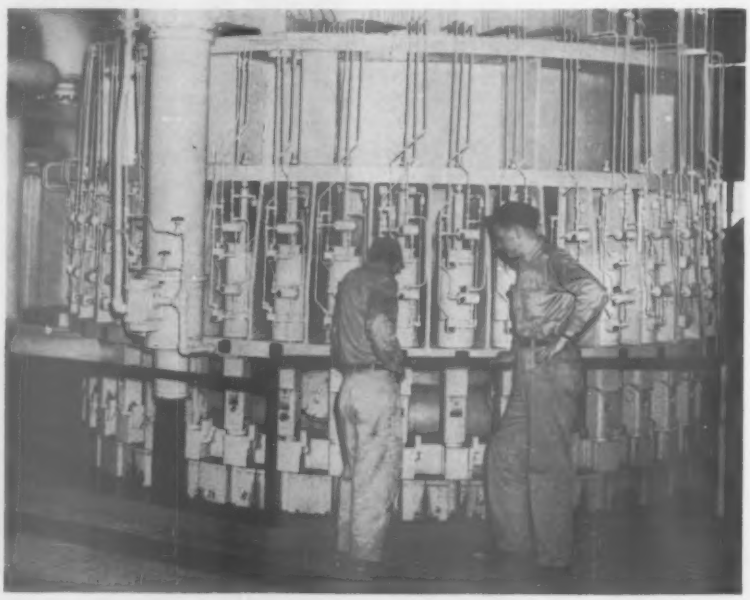

Figure 2. Fire-resistant hydraulic fluids operate the discharge doors on this giant pulp digester. (Courtesy Union Carbide Chemicals Co.)

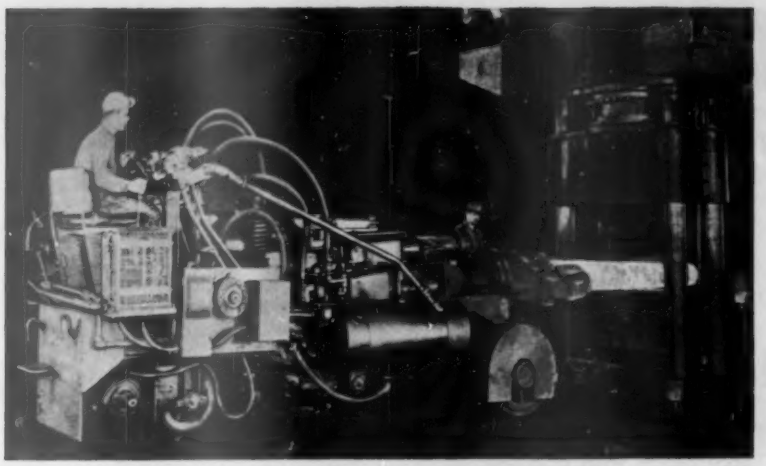

Figure 3. Fire-resistant hydraulic fluids are used to operate this manipulator that handles hot ingots. (Courtesy Union Carbide Chemicals Co.)

16. In some instances, high-pressure oil escaping through a small orifice has been known to penetrate the skin. In most cases, however, the operator receives only an oil shower.

17. Prolonged contact with hydraulic oils may irritate the skin of some people. Precautionary measures to minimize skin irritation include frequent and thorough washing with warm water and a good industrial cleanser.

18. Some people are allergic to oil on their skin. Such a condition may or may not be dangerous or serious. Nevertheless, a person in whom an allergy is revealed because of exposure should be restricted from hydraulic service work.

19. Generally, fire-resistant hydraulic fluids present only limited health hazards to personnel. Because these fluids represent such widely different types of products, it is impossible to generalize regarding their toxicity. Fluid suppliers should be consulted regarding the toxicological properties of their particular fluids.

20. Few of the fluids have been found to be skin irritants or sensitizers. However, these fluids do have some degree of skin penetration, and, through long and extensive contact, an individual could absorb enough fluid to produce systemic toxicity.

21. Some of the fire-resistant fluids may be considered eye irritants. Therefore, employees should wear goggle-type eye protection when handling these fluids, breaking fittings, or bleeding lines.

22. Although the amount of vapor from the fire-resistant fluids at room temperatures is too small to constitute a health hazard, hazardous concentrations can occur at elevated temperatures (as in fire). Respiratory protection* will be required for prolonged exposure to the products of decomposition occurring at elevated temperatures.

Design of Equipment

23. Proper design of hydraulic equipment will eliminate many hazards in its use. All hydraulic piping and other equipment should be designed for pressures well in excess of the maximum anticipated. A safety factor at least eight over normal working pressures is recommended for piping and tubing.

24. Equipment such as flexible tubing, which is known to have a definite life under specific operating conditions, should be replaced at predetermined intervals. The test pressure should be 50 per cent greater than the operating pressure.

*See *Respiratory Protective Equipment*, Data Sheet D-444, National Safety Council.

25. To prevent piping from vibrating, it should be securely fastened to the machine, and the machine should be securely anchored to its base. Piping should be placed where it will not interfere with the adjustment, repair, or replacement of control valves. Piping must not be used to support valves or other equipment where vibration might damage the piping. Exposed pipes which might be used as steps should be protected with a suitable cover.

26. Hydraulic equipment should be designed to meet the following additional safety requirements:*

a. Flexible lines should be restrained or confined if their failure might constitute a hazard to personnel.
b. The operator should not be required to reach past revolving spindles, moving tools, or moving machine or equipment elements to reach manual controls.
c. Hydraulic circuits incorporating accumulators should be so interlocked as to vent or isolate accumulator fluid pressure when the power is shut off. Full information for proper servicing without hazard to personnel should be posted on or near the accumulator.
d. In hydraulic systems containing flammable fluids and using gas at pressures over 250 psi, nitrogen or another inert gas should be used.

Changing to Fire-Resistant Fluids

27. Various precautions should be observed in preparing machines for change-over from oil to fire-resistant fluids. Many types of fire-resistant fluids tend to soften and peel off oil-resistant paints and to loosen oil, rust, and sludge. It is therefore necessary that all paint be removed and that the system be completely drained. In low spots and in valves, elbows, and accumulators, where drainage is normally not possible, connecting joints should be broken, drained, and cleaned individually.

28 Where phosphate ester fluids are to be used, oil residue must be removed from the system as completely as possible. Oil is sol-

*JIC *Hydraulic Standards for Industrial Equipment*, formulated by Joint Industries Conference (1953), published by General Motors Corporation, Detroit 2, Michigan.

uble in the phosphate ester material, and more than about 1 per cent residue of oil could impair its fire-resistant qualities. The various parts of the system must be drained and all traces of oil removed by means of low-pressure air.

29. If possible, the reservoir should be wiped by hand. In systems so complex and inaccessible that draining and handwiping are not possible, the fluid itself can be used as a flushing medium. It should be circulated through the machine for several hours until it is hot enough to do a good job of cleaning.

30. During this time, the paint in the reservoir will be loosened and most of it can then be readily removed. If it is impossible to get at the reservoir to remove the paint, flushing with the fluid must be continued until the paint peels off and is carried to the filters by the fluid.

31. The synthetic fire-resistant fluids have a deleterious effect on packings normally used with hydraulic oil, causing the seals to swell and bind. At the time of change-over, these seals should be replaced with types suitable for use with synthetic fluids.

32. The aqueous-base fluids do not affect standard seals used with petroleum oils with the exception of cork-impregnated rubber gaskets. These gaskets should be replaced with mechanical-type rubber seals.

33. Flow characteristics of fire-resistant fluids, because of their high specific gravities, have a considerable effect on the operation. Therefore, a minimum height from fluid level to pump intake should be maintained at all times.

34. On intakes, a 60-mesh screen or one of larger openings should be used. A screen of small openings interferes with smooth flow into the pump. Where water-glycol fluids are used, these screens should not be coated with either cadmium or zinc (galvanized) since such coatings react with water-glycol fluids. The products of such a reaction may clog the suction screen or may be distributed throughout the system with ensuing damage to pumps, valves, packings, and cylinders. Satisfactory screen materials are brass, bronze, Monel metal, nickel, ordinary steel, and stainless steel.

35. The water content of water-base fluids is depleted in varying degrees according to the temperature of the operation and the design of the equipment. Water content can be checked by running a viscosity determination. Thickening of the fluid indicates a loss of water, which must be compensated for by the addition of distilled or boiler feed (deionized) water, in accordance with charts furnished by the supplier of the fluid and as required by the level of the viscosity.

36. In well-designed hydraulic systems, reservoir temperatures can be maintained at less than 130 F, in line with the recommendations of the Joint Industries Conference.* Where temperatures are thus controlled and where vapor can escape only through the fluid intake breather, water evaporation from the tank will be very low.

37. The chemical decomposition of water-base fluids, caused by contamination, malfunctioning of the hydraulic system, or failure of the water cooler with resultant high temperatures, can be determined by measurement of the pH value. Limits for pH value can be obtained from the supplier. If the fluid falls outside these limits, the supplier's recommendations should be secured.

Maintenance

38. A program of preventive maintenance conducted by men who are thoroughly familiar with hydraulics will do much to prevent accidents. A file of all hydraulic circuit diagrams should be established. This file is just as much a part of the safety program for maintenance personnel as are the safety rules listed below:

a. When questions arise, study the manufacturer's bulletins and safety instruction manual. Do not experiment.
b. Before doing any maintenance on hydraulic equipment, lock the main electrical switch "off" with a padlock to prevent the machine from starting accidentally.
c. Next, check the hydraulic unit to make certain that the pump is not operating. At the same time, make a visual check of the pressure gauges.
d. Before breaking any lines, bleed the pressure from all lines and units.
e. Check the hydraulic circuit to see if it has an accumulator. If it does, open the discharge valve and discharge the pressure back to the tank.
f. Before disconnecting any line, place a cloth over the fitting to be disconnected and hold it there as you crack the fitting loose. Any pressure will then discharge harmlessly to the cloth or the floor.
g. When doing maintenance work on hydraulic equipment, wear goggle-type eye protection. Even a pressure too small to be indicated on the pressure gauge may do bodily harm and give you an oil bath.
h. Block rams on cylinders so that they cannot drop when the circuit is drained.

*JIC Hydraulic Standards for Industrial Equipment.

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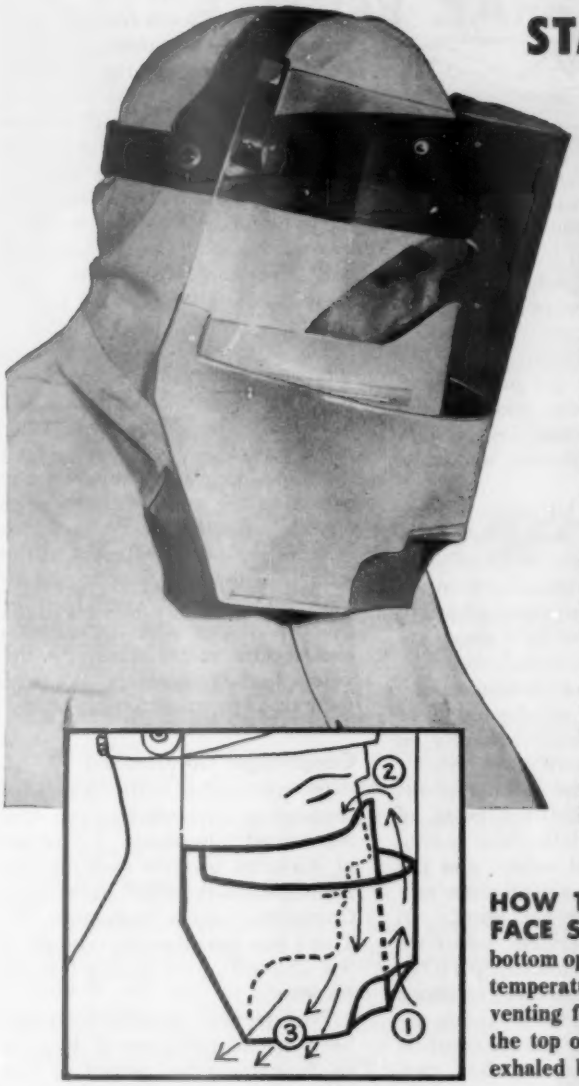
ACKNOWLEDGMENT

This data sheet was prepared by the Western Pennsylvania Chapter of the American Society of Safety Engineers. It has been extensively reviewed by members of the National Safety Council and by representatives of chapters of ASSE. It has been approved for publication by the Publications Committee of the Industrial Conference of the National Safety Council.

UNRIVALED SAFETY AND COMFORT IN ICY WINTER WINDS



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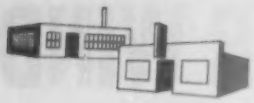

By A. M. Baltzer and John T. Curry

Small Business Program Staff, National Safety Council

Fun with Safety

"The safest place to take a ride these speed-happy days is in a tunnel of love." Of course, Paul Jones, director of public information for the National Safety Council, was speaking "statistically" rather than "romantically" when he made that startling statement to compare highway safety to amusement park safety at the convention of the National Association of Amusement Parks, Pools and Beaches, in Chicago on December 2.

The NAAPPB's interest in safety is more far-reaching than this assertion indicates. It recognizes the need for safety standards and public confidence in safe equipment. Prior to the convention the president and the executive secretary of the association spent a considerable amount of time in the Council offices conferring with several staff members, and preceding Mr. Jones' talk the Council presented recommendations to the Board of Directors which resulted in the launching of a long-range safety program.

With public liability and workmen's compensation insurance costs rising to more than $1,000 per day of operation in some of the larger and more safety-minded amusement parks, the need is obvious. A survey of compensation and public liability costs and safety activities will help a safety committee plan the program. Congratulations to another progressive association for organizing to help prevent death-defying thrills from turning into death and hospital bills.

Safeway Profit Story

The employee magazine of the Safeway Stores illustrates the importance of safety with a story

PROFIT EATEN UP in 100 stores. (From NSC booklet "Plus Costs of Accidents.")

that the direct cost of accidents gobbles up the net profit from 100 of their 2,000 stores. Or, to put it another way, accidents cause a 5 per cent loss on net profits—and this does not even consider the many indirect losses involved in injuries to employees and customers.

Safeway is a big operator but 10,000 employee and customer accidents, that involve more than $2,000,000 direct costs, is too much for them! Their accelerated safety program is geared to a sharp reduction of costs through more attention to good housekeeping, training of all employees and placing responsibility squarely on the individual store managers.

Let's go beyond talking about the direct-plus-indirect costs of accidents. Let's talk about the indirect benefits of safety, and the relationship between *all* these *economic losses* and *net profits*. In the trades and services industries where traffic accidents, public liability, and customer relations are so important, the *complete* accident prevention picture must be studied. Viewed in that perspective even some industries with a low work injury rate may deserve much more attention. When the combined losses are translated into lost profits, it proves a most convincing argument to cost-conscious business men and association executives. Try it!

Food with Safety

The *School Lunch Journal*, published by the American School Food Service Association, devoted almost its entire December issue —33 pages—to the subject of safety for employees and the public. Highlighting the issue was an article by Trades and Services Section staff representative, Raymond Ellis, Jr. Council services and materials were also mentioned and illustrated prominently.

The articles ran the gamut from safety promotion to safety techniques in school lunchrooms and kitchens. The scope and completeness of the treatment is all the more commendable when one considers the safety "experience" of this association compared to some of the safety veterans in the industrial field. A wealth of general material is available for practically any other publication and specific material can be developed when necessary. We urge your trade journals to plug safety!

Cooperage Convention

In connection with the 43rd semi-annual convention of The Associated Cooperage Industries of America in New Orleans, the Association's Accident Prevention Committee met November 17. There was considerable interest in the Council's film, *Safety Doesn't Happen*.

For several years there has been considerable work done on an industry-wide survey of disabling injuries. It has long been felt that the general classification of logging and lumbering does not show the true picture of timber-cutting in the specialized operations of barrel-making. Barrel finishing and assembling is more hazardous than woodworking in general.

AROUND THE COMPASS

ACTIVITIES • PROGRAMS • EVENTS

By Nils Lofgren

Field Service Department, NSC

Appraisal Report Accepted, New Officers Elected

At its October 20 meeting the Conference of State and Local Safety Organizations accepted the report of the Executive Committee on the Inventory and Appraisal of State and Local Safety Organizations, and elected new officers for 1958-59.

The Executive Committee had been constituted as the Appraisal Committee, and its report concerned the status of organizations participating in the appraisal. This report was accepted by the NSC Board of Directors on October 21. Each of the organizations that participated in the appraisal will be given detailed recommendations for improvement.

Of the 59 metropolitan organizations accredited this year, 20 were given provisional status to enable them to complete recommendations which, when met, will make them eligible for full accreditation.

While 11 of the 23 staffed state organizations participated in the Inventory and Appraisal, it was the consensus of the committee that further development of criteria was necessary before evaluation could be made. For this reason, the evaluation of state organizations will not be completed until 1959.

The Conference elected Harry H. Brainerd, executive manager of the Western Pennsylvania Safety Council, chairman of the Conference for 1958-59, and Forst E. Lowery, manager of the Greater Minneapolis Safety Council, vice chairman.

Four managers were elected to three-year terms on the Executive Committee of the Conference: Dudley Andry, manager of the Metropolitan New Orleans Safety Council, Inc.; G. Ernest Bourne, manager of the Utah Safety Council; David N. Kaye, managing director of the Santa Clara (Calif.) County Chapter of the NSC; and William H. Keeler, director of the Rochester (N.Y.) Safety Council.

Seventeen Attend Managers' Institute

Seventeen safety organization executives attended the Managers' Institute October 13 to 16 at headquarters offices of the National Safety Council in Chicago. The Institute included 24 presentations by NSC staff members and three managers of safety councils.

Forst Lowery, manager of the Greater Minneapolis Safety Council, spoke on safety council services. Dan Hollingsworth, manager of the Oklahoma City Safety Council, discussed relationships with officials. And Harry Brainerd, executive manager of the Western Pennsylvania Safety Council in Pittsburgh, addressed the Institute at a luncheon on the final day on fundamentals of sound council operation.

The roster of organizational staff people who attended includes:

Neil Collins, Executive Secretary, Ohio State Safety Council, 8 E. Chestnut Street, Columbus 15, Ohio.

William D. Conner, Director, Portland Traffic Safety Commission, Rm. 411, Governor Bldg.. Portland, Ore.

Collin W. Dunnam, Executive Secretary, Citizens Traffic Commission, City Hall, Lubbock, Texas.

Fred H. Ellis, General Manager, Ontario Safety League, 1170 Bay Street, Toronto 5, Ont., Canada.

Charles H. Fulghum, Executive Dir., Mississippi Safety Council, Suite 443, King Edward Hotel, Jackson, Miss.

Stanley J. Kelso, Manager, Long Beach Safety Council, 305 East 10th Street, Long Beach, Calif.

Herbert L. Lanier, Managing Dir., Greater Waco Safety Council, 405 Southwestern Bldg., Waco, Texas.

Norman Ledgin, Director, Calcasieu Safety Council, City Hall, P. O. Box 581, Lake Charles, La.

Fred H. Lewis, Manager, Safety Council of Dayton Area Chamber of Commerce, Dayton, Ohio.

Leon L. Lines, Field Representative, Utah Safety Council, 119 State Capitol Bldg., Salt Lake City, Utah.

Tom Martin, Public Information Rep., Illinois Division of Traffic Safety, 507 Armory Bldg., Springfield, Ill.

Stanley G. Peck, Director, Kalamazoo Area Safety Council, 100 Pratt Bldg., Kalamazoo, Mich.

Harold A. Schink, Secretary-Manager, Racine County Safety Council, 818 - 6th St., Racine Wis.

Eugene K. Silverberg, Safety Supvr., Safety Council of Greater St. Louis, 722 Chestnut Street, St. Louis, Mo.

—To page 46

WEARING the eye protection required of Oldsmobile plant visitors, General George C. Stewart, executive vice president of the National Safety Council, takes a close look at one of Oldsmobile's posters. J. R. Stone, Oldsmobile's safety director, shows the company's safety exhibit in the final assembly plant. Gen. Stewart was in Michigan to present Award of Honor to city of East Lansing.

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United States Steel Supply – Steel Service Centers
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USS United States Steel

*TRADEMARK

Around the Compass

—From page 44

Norman G. Stanley, Field Rep., Indiana Office of Traffic Safety, 6085 N. Olney, Indianapolis, Ind.

Gladys Tolbert, Manager, Sacramento Safety Council, 817 - 10th Street, Sacramento 14, Calif.

Paul DeWitt Young, Executive Dir., Corpus Christi Area Safety Council, 736 Wilson Bldg., Corpus Christi, Texas.

George Harris of the NSC Field Service Department was the staff coordinator for the Institute.

Wisconsin Council Buys Youth Kits

Leslie Mangin, president of the Wisconsin Council of Safety, Inc., has announced the council has purchased a quantity of NSC's Youth Traffic Safety Kits.

The kits will be distributed to the state's 443 public high schools by the Safety Division of the Motor Vehicle Department, which cooperates closely with the State Department of Public Instruction in the promotion of safety.

Each kit includes a sponsor's guide for establishing a student traffic safety organization, and materials for faculty and student use.

North Dakota Holds School Conference

High school students and instructors met September 27 at the state capitol to discuss traffic laws and proposed legislation for effective safety. The state was divided into six districts with representation from each. Vice chairmen and secretaries were elected for each district for the coming year.

The conference is sponsored by the State Safety Council in cooperation with the Department of Public Instruction, the Public Safety Division and the Bismarck Safety Council.

Teacher was giving the kindergarten class a lesson in natural history. Turning to one she inquired: "What do elephants have that no other animals have?" The answer came quickly: "Little elephants."

The car to watch in traffic is the car behind the car in front of you.

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INDUSTRIAL HEALTH

Abstracts of current literature
on Occupational Hygiene, Medicine, and Nursing

By E. L. Alpaugh, *Industrial Hygienist, NSC*

Thermal Precipitation

"Counting Errors Due to Overlapping Particles in Thermal Precipitator Samples." S. H. Roach. *British Journal of Industrial Medicine.* Vol. 15. pp. 250-257. October 1958.

THE THERMAL precipitator is being used more and more by the industrial hygienist to obtain samples of particulate matter in the air, because the particle characteristics are not changed or altered in the collection procedure. This enables the hygienist to capture and observe the particle exactly as it appears in the air.

The particles usually have an irregular shape, and clumps of particles are generally assumed to be *aggregates* of particles present in the airborne sample. During the sampling procedure it is impossible to prevent overlapping of particles, and some aggregates are formed by the sampling procedure. The magnitude of the error caused by overlapping is discussed in this article.

Samples were obtained in a colliery. The magnitude of the error was estimated from a comparison of counts of pairs of samples, in which one sample of each pair was five times as dense as the other. This was achieved by operating two thermal precipitators side by side, with one of the instruments operated five times longer than the other. Each short-period sample was taken during the middle of the corresponding sample taken by the long-period instrument.

A total of 125 pairs of samples were taken and counted, using a 2mm oil immersion objective counting all visible particles. Then all samples were recounted, using a 4mm objective, restricting the count to those particles between 1 and 5 microns in diameter. In both cases any aggregate consisting of particles which overlapped one another was counted as one particle. Instruments were checked for ability to sample identically by operating both instruments for the same sampling period. The effect of contamination on the cover glass was investigated.

Results of this study indicated that, when aggregates of particles were counted as single particles, the error due to overlapping was at least 10 per cent. This resulted in underestimating average concentrations. Theoretical considerations are presented for the amount of error to be expected from overlapping, and these agree with the experimental conclusion that the error occurring in the number count at particle densities commonly used is large and cannot be ignored.

Chloroform Intoxication

"Chronic Chloroform Intoxication." P. J. R. Challen, D. E. Hickish, and Joan Bedford. *British Journal of Industrial Medicine.* Vol. 15. pp. 243-249. October 1958.

THE AUTHORS first provide a brief history of chloroform and describe its characteristics of toxicity.

The publication then goes into a study, environmental, and clinical, conducted in a confectionery firm that manufactured a medicinal lozenge containing chloroform as one of the main ingredients. Employees exposed to concentrations ranging from 77 to 237 parts per million complained of severe symptoms: lassitude, desire to sleep, "tight feeling in the chest," a "ball in the upper part of the stomach," that "stomach was distended," nausea, loss of appetite, and daze.

A second group of employees exposed to concentrations ranging from 22 to 71 ppm also complained, but the symptoms were less severe. No evidence of liver damage was found in those who submitted to medical examination and liver-function tests; (tests were performed on members of each group). There was no evidence of any damage to the liver. To absolutely determine the presence of liver damage, liver biopsies would be necessary, and it was not possible to perform this test.

The relationship between exposures to low concentrations of carbon tetrachloride and chloroform is discussed. The authors believe the present threshold limit value of 100 ppm recommended by the American Conference of Governmental Industrial Hygienists is too high and should be reduced to 50 ppm.

Riveting Noise Study

"Some Notes on the Effects of Excessive Noise on the Hearing of a Group of Workers." G. F. Keatinge and S. Laner. *British Journal of Industrial Medicine.* Vol. 15. pp. 273-275. October 1958.

THIS STUDY attempts to relate the deterioration in hearing resulting from prolonged exposure to intense intermittent noise. Studies were made of riveting operations. Maximum readings ranged from 115 to 128 decibels.

Peak intensities were observed in the frequency ranges of 1,500 to 2,000 cycles per second and 1,000 to 1,500 cycles per second. Those workers studied had been

—*To page 53*

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Circle Item No. 17—Reader Service Card

Industrial Health

—*From page 50*

exposed to noise from 1 to 7 years. Audiometric records of these workers were available for the research project. The effects of aging were taken into consideration.

Results indicated that, for workers less than 40 years old, exposure to this type of noise from 1 to 7 years produced larger hearing losses during the first three years of exposure. The authors suggest that protective devices will be most effective if introduced at entry into the job or soon afterwards. They also suggest that further studies be made to determine whether the hypothesis is true that, after three years of exposure to high level intermittent noise, no further deterioration occurs.

New Publication in Industrial Hygiene Field

Short, current reports of industrial hygiene work in progress throughout the country are contained in a new letter-type publication, *Industrial Hygiene News Report*, which made its appearance with the October issue.

The *Report* is designed to increase the knowledge of current industrial hygiene work through dissemination of information, and to report activities conducted by individuals and agencies throughout industrial, educational, and governmental groups.

This new publication will discuss precautions for handling hazardous materials, unusual exposures, ionizing radiation, modifications of equipment, new analytical methods, toxicological tests conducted, methods for obtaining representative industrial hygiene samples, air pollution problems, noise control methods, and other pertinent data.

Contents will also include announcements regarding personnel changes in industrial hygiene units, meetings of national related associations, and developments of industrial hygiene instrumentation or equipment.

The consultant editor, Howard N. Schulz, is a member of the American Industrial Hygiene Association, in which he served as editor of the *AIHA Quarterly*. The publisher, D. L. Flournoy, was in charge of editorial and production work on the *AIHA Quarterly*. Publication office is 1791 W. Howard St., Chicago 26.

Car Stolen, Worker Loses Sight

Because William Jackson's car was stolen, he now has only partial vision in his left eye.

A punch press operator for Spencer-Safford Loadcraft, August, Kan., he received his crippling injury when he was struck by a steel splinter thrown by his machine.

Only the day before, someone had stolen Jackson's car—in it were the safety glasses which would have saved his sight.

New Plant-Wide Safety Hat

Features WILLSON® GEODETIC

IN INDUSTRIAL SAFETY HATS ONLY WILLSON HAS THE TRUE "GEODETIC" SUSPENSION AS DEVELOPED IN CORNELL AERONAUTICAL LABORATORY

Advanced Scientific Design

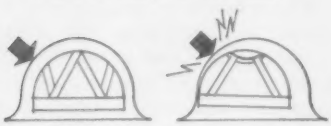
One of the numerous basic safety equipment improvements developed by famous Cornell Aeronautical Laboratory, Inc., for use by the Armed Forces and in athletic equipment. The Cornell Laboratory proved that death or serious injury from head blows often results from shock transmitted to brain through conventional suspension harness. The answer, produced through 10 years of research and development—shock dissipating suspension fitting "great circle" or "geodetic" lines of the head.

Protects Brain From Shock Waves

GEODETIC

Conventional suspension (right) focuses or "funnels" shock of a vertical blow directly through narrow, concentrated circle of crown string . . . can actually turn crown string into a lethal instrument. Center-crossed straps have similar effect. New "geodetic" harness dissipates impact shock waves over wide head area. Wearer can sustain much heavier blow without injury.

Minimizes Danger of "Bottoming"



GEODETIC

Crown-string suspension (right) sits on head, allows hat to shift or tilt and crash against skull under angular blows. GEODETIC Strap Suspension conforms to head, gripping effect strongly resists tendency of hat to "bottom" on head.

Comfortable and Tamperproof

GEODETIC

GEODETIC Strap Suspension (left) spreads and balances weight of hat, itself, and prevents slipping and tipping. Willson suspension features comfortable size-adjusting leatherette sweat band, but crown straps are permanently fitted to head shape, permit no adjustment of clearance between top of head and hat shell. 1¼ in. or more is always maintained. Lukens Steel Company discovered that many workers will loosen a crown string, dangerously reducing clearance. This was a major factor in choice of Willson head protection.

Program at Lukens Steel

Head Protection

The Willson GEODETIC Strap Suspension can effectively protect your men from impact shock!

For its new safety hat program Lukens Steel Company, Coatesville, Pa., features Willson Super-Tough Safety Caps with GEODETIC Strap Suspension.

new kind of suspension—Developed in the world-famous safety laboratories of Cornell University, "geodetic" suspension, or "great circle" suspension, brings to industrial headgear an important *new dimension* of safety—tamper-proof protection against the *shock* of impact—virtually ignored by all conventional suspensions!

saves lives—With conventional suspension, designed only to hold the hat on the head, men too frequently can suffer brain injury or be killed, even when the *hat shell has not been penetrated.* Shock is transmitted directly to the brain. The harder the hat, the worse this effect! The *new* suspension is scientifically designed to *spread and dissipate impact shock,* harmlessly.

numerous benefits—How GEODETIC Strap Suspension protects the brain and the numerous additional benefits of exclusive Willson GEODETIC Strap Suspension Hats and Caps are clearly detailed on these pages. Read this lifesaving story . . . give your men *modern science's best answer* to vital head protection!

Safety Award being presented to Lukens Plant #1. All men are wearing Willson phenolic caps with GEODETIC Strap Suspensions.

Why risk lives even one unnecessary day?
Call your Willson distributor now or write direct for facts about the full line of full-protection Willson hats.

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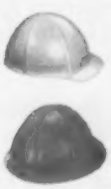
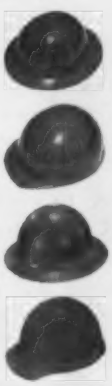
Products Division, Ray-O-Vac Company
205 Washington Street, Reading, Pa.



Super-Tough **INSULATING HATS AND CAPS** meet all specifications of Edison Electric Institute for Insulating Safety Headgear for Electrical Workers. Injection molded shell is one piece of lightweight, tough, moisture-proof, resilient plastic, no holes, uniform strength. High crown, extra safety clearance. Yellow or white. Special dielectric geodetic suspension with plastic clips—suspension contains no metal.



WILLSON ***Super-Tough***
PHENOLIC HATS AND CAPS

Modern construction from rugged canvas sheets, laminated and smoothly sealed over with strong phenolic resin under controlled heat and pressure, makes this the toughest safety hat ever available! Exclusive shock-absorbing resiliency makes it the perfect protection mate for GEODETIC Strap Suspension. New color process gives wide choice of durable, brilliant, high-gloss finishes. Standard color is natural brown finish. Meet or exceed all federal specification standards for high-impact strength and pierce resistance.

Super-Tough **FIBERGLAS HATS AND CAPS** meet or exceed all standards for high-impact strength, pierce resistance, and dielectric qualities stated in Federal Specification GGG-H-142-b. Lightweight comfort, balanced feel, and choice of bright colors make the Willson Fiberglas a favorite with many workers.

APPROVED WILLSON RESEARCH CENTER

Circle Item No. 19—Reader Service Card

CONSULTATION CORNER

By L. C. Smith, *Industrial Department, NSC*

Got a problem in accident prevention or occupational hygiene? Questions are answered by mail, a few of general interest being selected for publication here.

Safe Hitches For Wire Rope

Question: Could you give me information or assistance on a problem pertaining to wire rope? With a choker sling and other types of hitches, it is recommended that blocking should be used to protect the sling from sharp corners. However, blocking or padding still permits a very small bending radius around the corners of the object being lifted.

Since the stresses developed in wire rope, as it is bent over sheaves or saddles, does decrease the safe working load and must be considered in every wire rope lifting situation, how do you know if the hitch is safe?

Answer: It is true in lifting with wire ropes that ropes bent around sharp corners or a small radius may become kinked or damaged, and the safe working load decreased. For this reason each job should be carefully studied and the proper hitch selected.

The General Electric Company, Schenectady, N.Y., has published a booklet, *How To Lift With Overhead Cranes*, which outlines how to hitch jobs correctly. Quoting from this publication:

"No lifts should be made with cables in direct contact with machined surfaces or sharp edges of the work. Guards should be used at these areas to protect both the cables and the work.

"When a guard is required, care should be taken to get the right one for the application. There are a number of different types of guards, and each is best suited to a given class of work. If the wrong guard is selected, it may provide little or no protection during lifting.

"At General Electric, most cable guards are made to blueprint specification. These are designed to provide a minimum safe radius for the cable during the lift. This eliminates the danger of cutting or 'kinking' the cable.

"'Kinking' is most likely to occur when a cable is wrapped around work with a sharp edge and a small included angle. When a load is lifted, the outer strands of the cable are badly stretched. In some cases, the stretching is so severe that the outer strands will not spring back to their original length when the load is removed.

"When this occurs, the cable is permanently damaged. With the outer strands longer than the inner, there is no way that the cable can be straightened. To avoid kinking, cable guards should be used and the included angle in the cable should be no less than 45 degrees."

Due to the rapid buildup of stresses with variances of angles, it is important that all wire ropes or slings have a minimum safety factor of at least five. Too many workers figure that, if a sling is long enough to go around a load, it is big enough to lift the load regardless of the actual strength of the sling. For this reason it is important that all men responsible for hitching loads understand the fundamentals of proper hitching, so the hitch will be safe.

Unsafe Acts/Conditions— 85 to 15 Ratio?

Question: In our organization we have been using the ratio of 85 to 15 to indicate the percentage of all industrial accidents caused by unsafe acts and the percentage caused by unsafe conditions. On several occasions safety men outside our organization have shown doubt as to the validity of these figures. What information does the Council have on this subject?

Answer: These figures probably originated with Heinrich's study of 25 years ago, in which he concluded that 88 per cent of all industrial accidents were caused by unsafe acts, 10 per cent by unsafe conditions, and 2 per cent by acts of God.

In this study it was recognized that both an unsafe act and an unsafe condition existed in many

—*To page 58*

snow up to here

warmth down to here

When temperatures drop, accidents and colds climb. Absenteeism mounts. Outdoor workers lose efficiency. Here are *two* ways to beat the problem: *two safety boots that keep feet warm and snug.* The 8-inch moccasin boot was so popular last winter that we added another 8-incher to the line. At left, the new S-4137, plain toe with cushion crepe wedge sole bottom. S-4135, at right, has moccasin toe with oil-resistant Neocork sole and heel. Both are fully insulated, Quilon®-tanned for water and chemical resistance. Both are fully leather-lined, with cushioned insole and storm welt. Steel toe box, of course. Send coupon for details of our complete safety shoe line. And for set of free safety posters, too.

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Gentlemen: Please send me the following at once:
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- ☐ Fully illustrated list of Thom McAn Safety Shoes
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Consultation Corner

—From page 56

cases, but in developing the ratio Heinrich used whichever of the two circumstances contributed most to the injury. This resulted in figures which added to 100 but disregarded all circumstances except the principal one.

To accept these percentages literally is not realistic. On such a basis it would be easy to conclude that, since only 10 per cent of the accidents come from unsafe working conditions, time and money should not be spent on trying to prevent accidents in this area.

When all the facts are carefully examined, many accidents that may at first seem to be in the unsafe-act category will be found to be caused by a combination of an unsafe act and an unsafe condition.

In accident prevention work all the facts should be carefully examined before the accident is recorded and becomes a part of your record.

This quotation from our 1956 edition of *Accident Facts* relates to work injuries reported in Pennsylvania: "Among 91,773 work accidents reported in Pennsylvania in 1953, an unsafe act was identified in 92.8 per cent of those classified, and an unsafe mechanical or physical condition in 92.5 per cent. As indicated by these figures, in most cases there were both an unsafe act and an unsafe condition."

The figures from Pennsylvania and those reported by other states do not indicate there is any basis for the often-repeated statement that "85 per cent of the accidents are caused by unsafe acts and 15 per cent by unsafe conditions."

Proper Hood for Perchloric Acid

Question: We are installing a laboratory in which we plan to have two ventilated hoods. In the one hood we will use ether, alcohol, and similar substances. In the other hood we will use hot perchloric acid solutions. We are planning to join the two ducts

—To page 124

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COMING EVENTS

in the safety field

Jan. 22-23, Milwaukee, Wis.
Seventeenth Mid-Winter Occupational Safety Conference and Exposition (Hotel Schroeder). R. W. Gillette, executive director, Wisconsin Council of Safety, 1 W. Wilson St., Madison, Wis.

Jan. 26-29, Cleveland, Ohio.
Tenth Annual Plant Maintenance and Engineering Show (Public Auditorium). Clapp and Poliak, Inc., 341 Madison, New York.

Jan. 28-30, Berkeley, Calif.
Eleventh California Street and Highway Conference (University of California). Institute of Transportation and Traffic Engineering, U. of California, Berkeley, Calif.

Feb. 5-6, Los Angeles
Ninth Annual California Statewide Governor's Industrial Safety Conference (Biltmore Hotel). Michael Flagg, conference coordinator, 965 Mission St., San Francisco.

Mar. 1-3, Asheville, N. C.
Southern Safety Conference and Exposition (Battery Park and George Vanderbilt Hotels). W. L. Groth, executive director, P.O. Box 8927, Richmond 25, Va.

Mar. 4-5, Philadelphia
Twenty-fifth Annual Regional Safety and Fire Conference and Exhibit (Bellevue-Stratford Hotel). Harry H. Verdier, executive director, Safety Council, Chamber of Commerce of Greater Philadelphia, 121 South Broad St., Philadelphia.

Mar. 16-17, Boston
Thirty-eighth Annual Massachusetts Safety Conference and Exhibit (Hotel Statler Hilton). Bruce Campbell, manager, Massachusetts Safety Council, 54 Devonshire St., Boston 9, Mass.

Mar. 17-18, Fort Wayne, Ind.
1959 Northeastern Indiana Safety Conference and Exhibit. Ivan A. Martin, manager, Safety Council, Chamber of Commerce of Fort Wayne, Fort Wayne, Ind.

Mar. 22-25, Houston, Tex.
Annual Texas Safety Association Conference (Rice Hotel.) J. O. Musick, general manager, Texas Safety Association, Inc., 830 Littlefield Building, Austin, Tex.

Mar. 23-25, Los Angeles

Sixth Annual Western Safety Congress and Exhibits (Ambassador Hotel). Joseph M. Kaplan, secretary-manager, Greater Los Angeles Chapter of the National Safety Council, 3388 W. 8th St., Los Angeles 5, Calif.

April 5-9, Cleveland, Ohio.

1959 Nuclear Congress (Cleveland Auditorium). Engineers Joint Council, 29 W. 39th St., New York, N. Y.

April 6-7, Toronto, Canada.

Annual Conference of the Industrial Accident Prevention Associations (Royal York Hotel.) R.G.D. Anderson, general manager, Industrial Accident Prevention Associations, 90 Harbour Street, Toronto 1, Ontario.

April 6-10, Cleveland, Ohio

1959 Atom Fair, H. F. Grebe, exhibits manager, International Atomic Exposition, Architects Bldg., Philadelphia 3.

April 8-10, Gainesville, Fla.

Sixth Annual Conference on Accident Prevention Engineering (University of Florida). Donald B. Wilcox, conference coordinator, University of Florida, Gainesville, Fla.

April 9-10, Kansas City, Mo.

Fourteenth Annual Central States Safety Congress (Hotel President). George M. Burns, managing director, Kansas City Safety Council, 419 Dwight Building, Kansas City, Mo.

April 13-17, New York

Twenty-ninth Annual Safety Convention and Exposition (Hotel Statler). Paul F. Stricker, executive vice president, Greater New York Safety Council, 60 E. 42nd St., New York 17.

April 20-22, Syracuse, N.Y.

Sixth Biennial Central New York Safety Conference and Exposition (Hotel Syracuse.) Newell C. Townsend, administrative secretary, 351 South Warren Street, Syracuse 2.

April 22-23, Indianapolis, Ind.

Twelfth Central Indiana Safety Conference & Exhibit (Claypool Hotel). Jack E. Gunnell, director, Safety Council, Indianapolis Chamber of Commerce, 320 N. Meridian St., Indianapolis 11, Ind.

April 28-30, Columbus, Ohio.

Twenty-ninth All-Ohio Safety Congress and Exhibit (Deshler-Hilton Hotel.) Arthur W. Moon, congress manager, Room 611, Ohio Departments Building, Columbus 15.

May 4-6, Allentown, Bethlehem, Easton, Pa.

Thirty-second Annual Eastern Pennsylvania Safety Conference. Harold A. Seward, secretary-treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem.

May 5-7, Niagara Falls, N. Y.

Nineteenth Western New York Safety Conference (Hotel Niagara). Clif-

ford H. Seymour, executive-secretary, Western New York Safety Conference, P.O. Box 315, Niagara Falls, N. Y.

May 12-14, Rochester, N.Y.

Second Triennial Genesee Valley Safety Conference and Exposition (Manger Hotel.) William H. Keeler, secretary-treasurer, Genesee Valley Safety Conference, Inc., 55 St. Paul St., Rochester 4.

May 18-19, Memphis, Tenn.

Ninth Annual Convention of the National Water Safety Congress. Herbert E. Hudson, president, National Water Safety Congress, 314 Canterbury Dr., Knoxville, Tenn.

The Diary

—From page 36

terly cold out and snowing. If you have trouble with the car or go down there and get into a hot argument with that foreman, it isn't going to be good for you."

I started to get mad, and then I realized that the shortness of my temper was proof he was right.

"Can't I go down, or can't you go over the foreman's head?" the boy asked.

I sat on the desk top thinking hard. I don't like to go over a man's head, but we've had trouble with that foreman before. I've given him plenty of chances to cooperate, and he's still stubborn.

"Maybe you're right," I said. "Maybe that's the best way. You go on down and join Lee. Tell him I'm calling Lottry's home office in Chicago. You two stay with the situation and call in in an hour."

I got on the phone and talked to Lottry's vice-president for manufacturing, doing my best to scare him plenty. He agreed to call the foreman and get the situation corrected, even if it delayed the rush order.

An hour later Lee called to say that a plumber was working on the sprinkler line and that shop hands were cleaning up the mess and restacking the lumber. I called the boys in, and we had a huddle on the problem of frozen sprinkler lines. This session led to the issuing of a bulletin to all project units, urging immediate inspection and, where necessary, insulation of the lines.

And then, to end the year patly, an hour ago the fire siren blew and, sure enough, a flash solvent fire had flared in the Lottry shop, near where the shavings had lain a few hours before. One sprinkler head let go and controlled the local fire in seconds.

The chain of events is clear and simple. If I had been healthy, I would not have made that analysis and revised the inspection schedules. Under the old schedule, none of us would have got to the Lottry shop till mid-January. Even if we had changed the schedule, and Lee had made the call he did, I would have wasted a couple of hours at least arguing with a foreman who wouldn't have listened to me, and then, and only then, I might have called Lottry's home office. It's at least a tossup that the cleanup would not have been completed or the sprinkler line thawed out before the flash fire.

So, if I had been healthy, we'd have ended the year with a disastrous fire and quite possibly loss of life.

Maybe I can work best if I stay closer to the desk, taking the long view of things. And maybe I had to have a heart attack to learn that.

Bread and Butter Issue

—From page 29

the fundamentals of accident prevention. Also, our goal is to teach safety committeemen how to make proper inspections and appraise their findings.

Our union—along with enlightened management—does not believe in covering up or whitewashing the facts surrounding an accident. There are reasons for every accident, and the best way to cut down the number of accidents is to discover these reasons and eliminate the conditions that caused the accident. Every foreman, worker, safety committee member, and investigator must know that the sole purpose of accident investigation is to stop future accidents.

Our union believes safety and sanitation are ways of life. As

such, the real motivation for safe and sanitary conditions must come from the workers themselves. This leads to clean and safe work places and to more efficient plant operation. To achieve these objectives we must have cooperation and mutual interest by labor and management.

The URW is proud of the safety record achieved in industries whose employees are represented by our union. We feel our members have contributed to this record. And we believe the majority of our employers have done an outstanding job in bringing about safe working conditions through understanding, cooperation—and action.

It would be folly to say the job is done. It is not done and never will be. Safety—a never-ending job—is a constant bread-and-butter issue for everyone.

Industry Neglects Fire-Safe Construction

Much modern industrial building shows critical deficiencies in fire-safe construction, the fall conference of the National Fire Protection Association was told.

A frequent and serious oversight in design is failure to provide for the emergency release of the hot gases and smoke generated by a fire within the plant, according to Edwin N. Searl, superintendent of engineering of the Western Actuarial Bureau.

"Many industrial buildings are being built with continuous, unvented roofs," he said. "With the advent of good lighting and conditioned air, the familiar monitors and saw-toothed skylights are disappearing.

"At the same time, building areas are expanding to unprecedented dimensions to accommodate the large-scale manufacturing operations of mass production industries."

The result, said Searl, is that fires in plants of this type mushroom throughout the interior instead of venting their hot gases and smoke to the outside.

"Firemen are unable to cope with such fires from the outside, and are driven back in attempts to fight from the inside."

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for your complete fire protection!

These famous brands, consolidated under a single organization, comprise the most complete line of fire protection products and services ever offered. Representatives of each of these brands are armed with dependable equipment, application experience and professional services to guard you against every fire hazard.

This high-quality, competitively-priced equipment includes approved fire extinguishers; automatic sprinkler systems; carbon dioxide, dry chemical and foam systems; fire hose, nozzles and couplings; industrial and municipal fire alarm systems; and accessory fire department supplies including ladders, sirens, clothing, breathing apparatus, first aid kits, etc.

Look for these famous brand names, sold through fire equipment specialty firms and leading industrial distributors. Consult the yellow pages of your telephone directory under "Fire Protection Equipment"

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Stennett Honored by Technical Group

JOSEPH C. STENNETT, manager of the Accident and Fire Prevention Department of the National Association of Mutual Casualty Companies, was one of three recipients of the Chicago Technical Societies Council's 1958 Awards of Merit. Mr. Stennett was honored for his outstanding achievements in traffic and occupational safety and fire prevention.

In the above photo, the Reverend J. Donald Roll, president of CTSC, is presenting the award. William O. Wilson, manager of Safety Standard Oil Company (Indiana) presented Mr. Stennett as the nominee of the Greater Chicago Chapter of the American Society of Safety Engineers.

Mr. Stennett's career in safety began in 1926 when he became field engineer for the Pennsylvania Department of Labor and Industry, later becoming director of the bureau of inspection. Under his direction, the bureau became an important force for the promotion of safety in the state's industries.

In 1939 he came to the National Safety Council as an engineer in the Industrial Department and was appointed assistant director of the department in 1942. In this capacity he contributed greatly to the development of the department's service and during the war he rendered outstanding help to the armed forces and the war industries in developing safety and training programs.

In 1946 he joined the American Mutual Alliance and helped to or-

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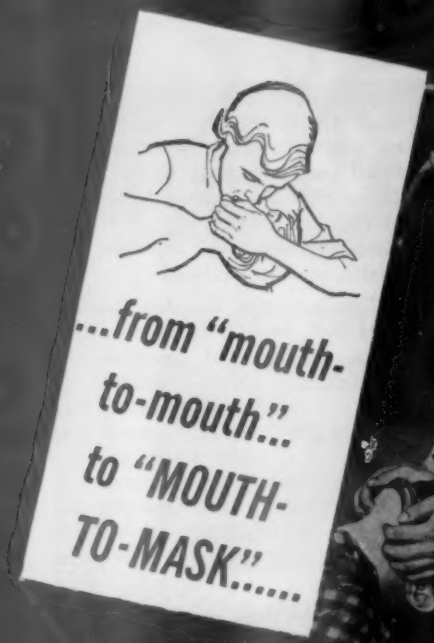

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The Globe M/M Mouth-to-Mask Resuscitator is the easy and natural way to revive the victim of an asphyxial accident. *. . . For First Aid in Drowning . . . Toxic Gas Inhalation . . . Asphyxia . . . Electric Shock . . . Inhaled Solvents . . . in All Cases where Breathing is Impaired . . . Especially Effective as a Breathing Assistor in Asthmatic Attacks.*

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125 Sunrise Place
Dayton 7, Ohio

Here is a complete, new, extremely effective resuscitator. This is the practical equipment for Manual Resuscitation . . . and It's Low-Priced, too!

34.50

(This price is for the complete M/M unit — including resuscitator, transparent face piece, aspirator, airway and carrying bag.) Complete kit, weighs only 2 lbs. 3 ozs.

FOR THE PATIENT:

1. The air entering the alveoli contains the full oxygen content (21%) of the surrounding air. In direct mouth-to-mouth resuscitation, the victim is ventilated with air containing only about 16%, 18% oxygen.
2. Air exchange in excess of 1000 ml. is easily accomplished.
3. The most efficient means for administering "pole-top" resuscitation when there is no mechanical resuscitator available.

FOR THE OPERATOR:

1. At no time is the patient's breath inhaled by the operator.
2. The operator is physically separated from the patient. He can observe chest movement and lip color without interrupting the rhythm of resuscitation.
3. A rebreathing system prevents hyperventilation of the operator. The M/M Resuscitator can be used by one operator continously for long periods.

* Patented under Henry Schein and Globe Industries, Inc., Patents Pending in U.S.A. and foreign countries.

ganize the accident and fire prevention department to serve three mutual insurance associations.

Throughout his career, Mr. Stennett has rendered notable service to the promotion of safety engineering in colleges, in universities and in cooperation with governmental agencies. He served as president of the American Society of Safety Engineers 1951-52.

Russian Eye Care

The Soviet Union's methods for dealing with visual trouble leave much to be desired, from the American point of view, according to the Better Vision Institute.

Like all health services in Russia, eye care is controlled by the Ministry of Health, and everyone employed in it is on a full-time salary basis. There are still some private practitioners, but most of them are in the older age brackets, and their share of the work is small and constantly diminishing. The authorities expect these remnants of a former way of life to disappear as they improve the health service facilities.

The average Russian patient goes first to a polyclinic, where there are general practitioners, dentists, and other specialists, as well as eyesight specialists. If he's given a prescription, he must take it to a pharmacy, which has one section devoted to optical dispensing but doesn't provide cosmetics or anything other than medical and corrective requirements.

There he finds only a few types of spectacle frames available, and the optical assistant tries different frames on him until he picks out one that seems to fit correctly. This is sent to the prescription house for insertion of lenses. There is a charge for spectacles ranging from nine rubles for a child to 15 rubles for an adult. This is low, but as in any nationalized health plan, the public pays in hidden costs for everything it gets, plus "overhead."

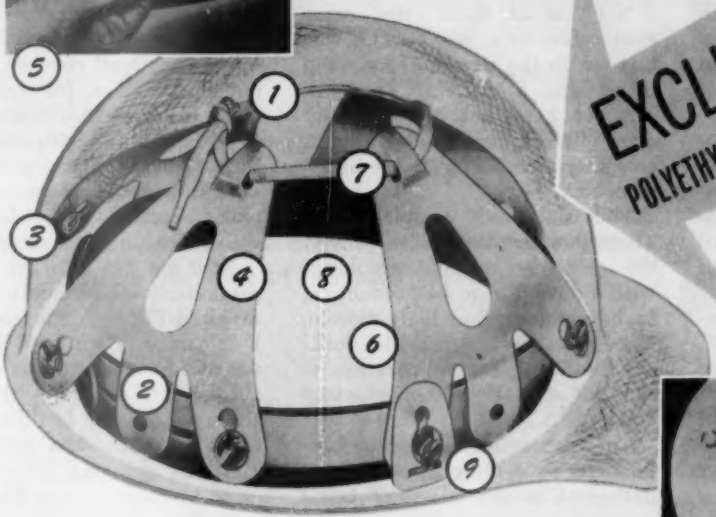
Lenses provided in Russia do not meet individual needs with the precision that American standards demand. About 70 per cent of the lenses dealt out to the prescriptions of Russian eyesight specialists are spherical ones, which correct farsightedness or nearsightedness. Only 20 per cent correct astigmatism; only about 10 per cent are bifocals; and the correction is generally the same for both eyes.

In America 30 million people wear bifocals or trifocals, and a very large proportion of the wearers have some correction for astigmatism, as well as variations in the two lenses, because the two eyes in a pair often have decided differences. Contact lenses are new to the Russians and are dispensed with too much speed to be properly fitted.

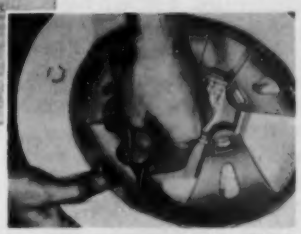
The Soviet Union has not had outstanding success in combatting eye disease. And it is decidedly backward in the matter of industrial vision programs to promote the visual welfare of workers.

"MOST WANTED"

HERE'S WHAT MAKES ALL *FIBRE-METAL* SAFETY HATS & CAPS *SO COMFORTABLE* and the world's *BEST SELLERS!*



EXCLUSIVE!
POLYETHYLENE SUSPENSION
...strong, pliable, COMFORTABLE



Suspension removable, but ONLY headband-sweatband need be replaced... saves time and 30% replacement cost. No dangerous metal parts.

Ask your Welding & Safety Supply Distributor for bulletins...

(1) Entire "suspension" is soft and pliable (including headband) . . . automatically conforms to head.

(2) NO METAL PARTS.

(3) Suspension interchangeable in *SuperGlas, SuperLite, SuperLectric* Hats and Caps.

(4) Suspension is *polyethylene* . . . will not mildew, sour or rot. Easily cleaned or sterilized . . . unaffected by detergents.

(5) Headband, of softly pliable polyethylene, conforms to head . . . adjusts to any head size from 6¾ to 8.

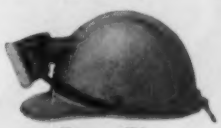
(6) All edges of suspension rounded for comfort. No hair pulling!

(7) Laces are recessed to prevent discomfort . . . adjust for depth.

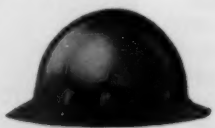
(8) Deep suspension keeps hat or cap on head firmly in any working position.

(9) Provision for chin strap in every hat and cap.

SuperGlas
(formerly *SuperGard*)
Fibreglas Safety Hats & Caps



SuperGlas
Safety Cap with
Miner's Lamp Bracket



SuperLectric
ELECTRICAL
Safety Hats & Caps

SuperLite
ALUMINUM
Safety Hats & Caps

In CANADA: Fibre-Metal (Canada) Limited, Toronto

OVER 50 YEARS OF WELDING & SAFETY

The FIBRE-METAL Products Company | Chester Penna.

Circle Item No. 31—Reader Service Card

Dispelling Compensation Myths

By JUSTIN JOHNSON

Does hiring the handicapped really boost insurance costs? Experience explodes that myth

WORKMEN'S compensation acts are not a myth. They are very much a painful reality to those who have to deal with their complexities. But to say that workmen's compensation is a bar to the hiring of the handicapped *is* a myth.

A person with a physical disability is a much better risk than his so-called normal counterpart, provided the handicapped individual is properly screened and placed and the company has an intelligent safety program.

Our firm has a large complement of its working force with physical disabilities. Yet, we have no record of a single disabling injury occurring to any members of our handicapped population in the past 10 years. Nor have we ever had a compensation case under the second-injury clause.

Many companies can make the same statement. For example, the Curtiss-Wright Corporation, employing an average of around 50,000 people, a large percentage of whom have physical disabilities, has had only one second-injury case in the past 10 years.

Often, professional people say employers use workmen's compensation and insurance as an excuse not to hire the handicapped, and employers cite example after example of poor decisions handed down by referees, commissions, and courts. You know these decisions — the coronary attack while at home in bed, the back difficulty, the epileptic (unknown to the employer, of course) who had a seizure and cracked his head, the silicotic, and others.

Not one of these cited cases ever refers to a person who was hired with the employer *knowing* there was a disability present. Yet, we keep hearing over and over: "Workmen's compensation acts keep us from hiring the handicapped."

This is the only complaint left. Through the years we've proven the properly selected employee with a disability to be productive, to be conducive to high morale, to be a steady and reliable worker. Workmen's compensation is the last excuse of the reluctant employer.

The subsequent or second-injury clause is the crux of the situation. Changes are ever being proposed and advocated. Bettering such clauses, they say, will make everything "hunky-dory."

In most states where second-injury laws exist, the static disabilities are well covered. There's not much room for argument—legal or medical—where a limb or a faculty is completely gone. This type of disability definitely should be no problem. (Yet how many hundreds of employers still won't hire amputees or the blind.)

Now we get into the dynamic disabilities—the diabetic, cardiac, arrested TB, epileptic, and others. I sincerely doubt any legislative act could successfully cover them, since each person with any of these disabilities is different and must be considered individually. Here we get into differing med-

To page 104

FOREMAN "writes" instructions on hand of blind worker.

JUSTIN JOHNSON is Special Products Representative, Hughes Aircraft Co., Culver City, Calif. This article has been adapted from a talk at the Annual Meeting of the President's Committee on Employment of the Physically Handicapped May 9, 1958, Washington, D. C.

Tuffy Tips On **SAFE USE OF SLINGS AND HOIST LINES**

Lifting Strains Take High Toll of Injuries

Did you know that in some states one in every six compensation claims involves back injuries? And that one insurance company says back injuries constitute 60% of their claim expense?

Hernia is another hazard of materials handling. One manufacturer reported 75% of his compensation claims involved hernias. This high incidence of hernias and back injuries can be greatly reduced by proper lifting equipment and methods.

What can you do to reduce materials handling accidents? Here are some of the answers:

1. **Teach** your workers rated load factors. Warn them not to overload slings.

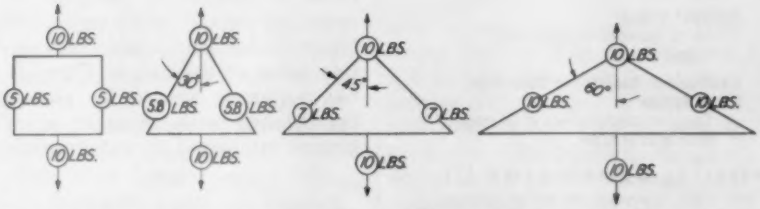
2. **Use** the right size hoist for every heavy lifting job. Don't put the load on human muscle.

3. **Show** workers how to rig hoists properly and safely. Load chains shouldn't be used as slings. Previous distortion and weakening of links may cause them to break even with a light load.

4. **Inspect** hoist load brakes often. Slipping or dragging brakes should never be used.

5. **Be sure** to use the proper sling for the job. Don't assume that all slings made of wire rope are right for all lifting operations.

How Sling-Leg Load Increases with Increased Fleet Angle



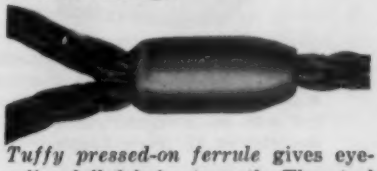
These four drawings show approximate load increases on each leg of a bridle sling as the vertical angle of spread between legs increases. For accurate factors for the various angles, refer to your Tuffy Sling Handbook. (Don't have one? Write Union Wire Rope Corporation. Specialists in high carbon wire, wire rope, braided wire fabric and stress relieved wire and strand. 2224 Manchester Avenue, Kansas City 26, Missouri.)

Get Your FREE Tuffy Sling Handbook

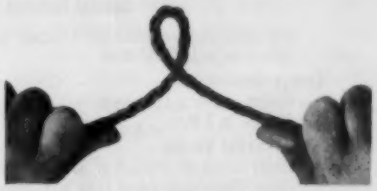
Gives full data on Tuffy Slings. Types, dimensions, weights and rated loads. Also contains an expanded section on fittings — many not previously shown. Write for your copy now.

Why Tuffy Slings Do A Better Job More Safely

Tuffy Slings have a combination of extra strength and super flexibility. The patented machine-braided fabric is the secret. It gives Tuffy greater strength, faster handling, longer life, greater safety than ordinary slings—at a cost to service life ratio that figures low. And it's so flexible that kinks can be pounded out without material damage.



Tuffy pressed-on ferrule gives eye-splice full fabric strength. The steel ferrule is applied under tremendous pressure. It literally flows into spaces between wires and strands. The friction force thus created gives the eye-splice 100% of the fabric strength. And the streamlined Tuffy ferrule leaves no openings or rough projections to snag or injure hands.



Tie a knot in a Tuffy Sling? Pull it as tight as you can. Even if you kink it, it's still easy to straighten out with no material damage to the sling.

See Your Tuffy Distributor

He's stocked for fast delivery of all your Tuffy Slings and Union Wire Rope needs.

UNION Wire Rope

Subsidiary of **ARMCO STEEL CORPORATION**

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Circle Item No. 32—Reader Service Card

Map Program for Safer Boating

The National Safe Boating Committee, a joint committee of representatives of commercial and pleasure boating interests, met in St. Louis recently to set in motion projects leading to safer use of inland waters and harbors and the promotion of harmonious relations between commercial and pleasure boat users.

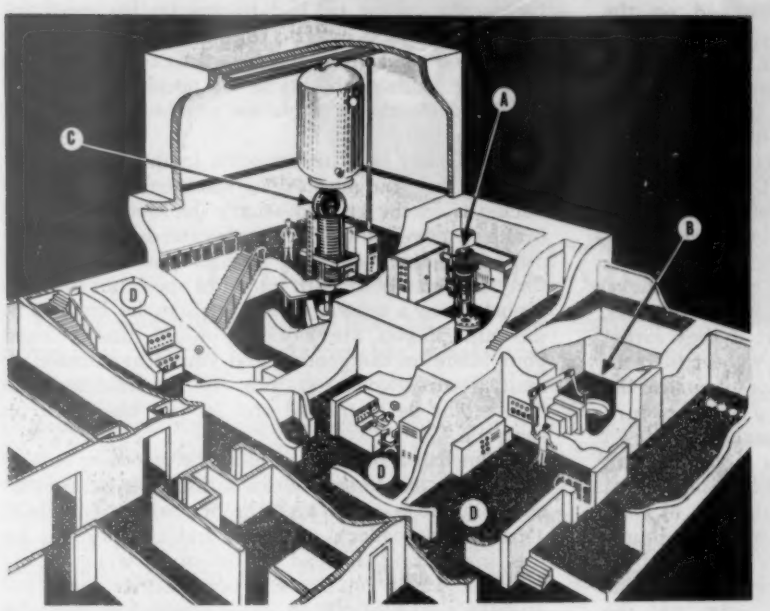
Committee Chairman D. L. Steele, Federal Barge Lines, St. Louis, announced the formation of a speaker's bureau as one of the committee's first steps toward the development of a nationwide program designed to unite commercial and pleasure boat operators in a cooperative effort for the improvement of safety along the waterways.

The Mississippi and Ohio river valleys will be the first areas of committee activity. Commercial river pilots will be among those called on to discuss with interested audiences the problems of holiday and working navigators.

For purposes of committee action, the nation has been divided into regions approximating the areas of present Coast Guard districts. A member of the committee will be asked to serve as chairman in each region to aid in the development of the regional program and to guide its operation.

Ultimately the committee intends to extend its program to cover all inland waterways, the Great Lakes, and coastal navigation areas of the nation. Committee activities are to be closely coordinated with those of other groups interested in water safety.

The Latest in Hot Labs



CUTAWAY DRAWING of new Texaco radiation laboratory. Walls from 3½ to 7 ft. thick shield operators from radiation sources.

(A) 8–10 million volt linear accelerator, or "electron gun."

(B) Hot cell where shipment of radioactive Cobalt^{60} was received. Operator, using one of two remote-control "master-slave" manipulators, watches experiment through 3½-ft. viewing window. Cobalt is packaged in 156 stainless steel "pencils." When not in use, source is lowered into 17 ft. of water in well. Hot cell is shielded by 3½ ft. of high-density concrete, 4½-ft. ceiling and 13-ton entry door.

(C) 3-million-volt Van de Graaf generator used to accelerate positive ions and create neutrons.

(D) Operating rooms of respective installations. Area on left (not shown) contains chemistry and analytical labs and another hot lab.

COMPLETION of the world's most fully-equipped industrial radiation research laboratory has been announced by Augustus C. Long, chairman of the board of The Texas Company.

This new laboratory at Texaco's Research Center in Beacon, N. Y., began operation with receipt of the largest single shipment of radioactive Cobalt^{60} ever made to any industrial installation, Mr. Long said. Rated at 29,100 curies and one of the most powerful sources of radioactive material outside the Atomic Energy Commission, the Cobalt^{60} was acquired from Atomic Energy of Canada, Ltd., after having undergone irradiation for almost three years in Canada's Chalk River nuclear reactor.

In addition to the Cobalt^{60}, the new laboratory houses two other major nuclear radiation sources, a 6 to 10-million-volt linear electron accelerator and a 3-million-volt positive-ion Van de Graaff generator. The linear accelerator, or "electron gun," was especially designed and built for Texaco.

These three radiation facilities make the Texaco laboratory the first industrial research installation equipped to bombard matter with the four basic nuclear radiation forces — electrons, positive ions, gamma rays, and neutrons, Mr. Long said.

Much of the initial research will necessarily be basic and in the area of the unknown, since science is far from knowing all of the atomic and molecular changes that might be brought about by the controlled use of such irradiation tools. As an example of what has been done, he cited the case of polyethylene, a petroleum derivative, where irradiation has raised this plastic's softening point by 125 degrees, making it a much more useful and versatile material.

Texaco plans to probe the atomic structure of petroleum and its derivatives to the end of creating new and improved fuels, lubricants, and petrochemicals. The company is looking forward, not only to better utilization of world petroleum resources, but to the inevitable harnessing for everyday use of that other and inexhaustible energy source — the atom.

This laboratory and its facilities have been designed to provide a wide margin of safety for personnel inside the lab and out. Scientists will work with the powerful radiation sources from behind a maze of protective walls that vary from 3½ to 7 ft. in thickness. Doors are equipped with electronic safety locks.

Radioactive Cobalt is lowered by automatic elevator into 17 ft. of water, when not in use, effectively shutting it off. Even air ejected from the air-conditioned lab is passed through special filters that remove particles far finer than those of cigarette smoke, making certain no radioactive contamination escapes into the surrounding atmosphere. The lab also has a full-time radiation safety officer.

In addition to the high-radiation installations, the new laboratory also houses a smaller "hot lab," where radioactive materials up to one curie may be handled. This hot lab contains a lead-brick radiological hood, a 9-in. viewing window, and a remote-control handling device. The hoods and sink in the hot lab drain into a 200-gallon holdup tank for continual monitoring of wastes.

Two organic chemical laboratories, a tracer lab, and analytical lab make up the balance of the actual laboratory area. There are also service areas, storage and utility rooms (containing the air-conditioning equipment and a gasoline-driven electric generator to supply current in an emergency) and technical offices.

Men to Move the Earth

—From page 23

ment mishaps that must be impressed on the learners.

For instance, Whitey Rasor, truck operation and maintenance instructor, tells his class: "When you raise your box at night to grease it, put a 4 x 6-in. hardwood piece into this position—like this, where my pencil is on the model—and with the box in 'hold' position, you can get under there and work with no danger of its falling on you."

Vern Strassler demonstrates crawler tractor technique with a foot-long plastic toy in a sandbox before he takes his section out to the equipment. He doesn't hesitate to tell the new men the obvious, because he knows they can get hurt if they forget the obvious: "Remember you have weight in front and weight in back, and your tractor pivots in the middle. When you go over the top of a hump, turn and go down the other side at an angle. If you let the front end fall with a thump, you might catapult yourself right out in front of the blade. Maybe that doesn't scare you, but it would scare me. As the fellow says, 'I'm not afraid of getting hurt, but I can't stand the pain.'"

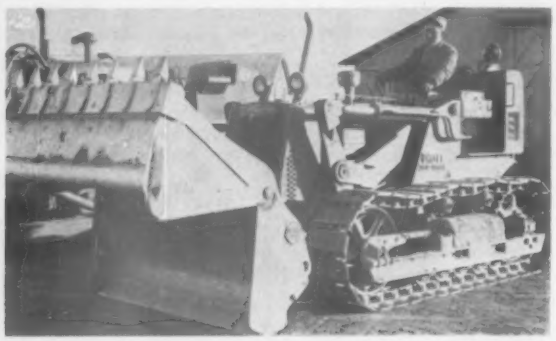
Vern repeats until the men know it as well as he does: "Let your dozer blade down slow, put the transmission in neutral, and disengage the engine clutch." He illustrates the importance of these basic instructions with stories—not pleasant stories, but stories that would make life unpleasant if their lesson were forgotten. One story concerns an operator who forgot to block equipment. He stepped between a tractor and a sheepsfoot roller to start the tractor. First he had to fire up his auxiliary engine. Just as it caught, the roller began to move and rolled over him. The instructors all stress guarding against this type of accident: "By all means block these machines so they can't move down on you."

John Dixon tells his students in the scraper section: "When you get off your machine, be sure your bucket is on the ground—that's the best emergency brake you ever saw. The scraper needs extra power during loading. It's got enough power to travel forty miles an hour with a load of spoil, but it needs a push from a crawler tractor while the bowl is in the cut. If you are working on the dozer, leave your blade on the ground and your transmission in neutral while you're waiting for the next scraper. You might be distracted and let the blade fall on someone."

Dixon has a personal reason for stressing safety, though he confesses he is a little self-conscious about it. He was checking the fan belt on an "H-O" (Hough Payloader) one day, and the student he was instructing, instead of listening, went to the controls, which on this front-end loader were out of John's line of vision. The student started the engine, and John lost a finger. He says, "Their minds race ahead of what you're telling them."

Trainees come to the school from all over the world. Recently 11 men from Spain enrolled. They

BEGINNER works out on the back hoe. While waiting his turn on the larger equipment, this student helps clear stumps and roots left after timber was bulldozed.



JOHN RONALDO, field supervisor, demonstrates use of the Drott "4-way." The machine can be used as a bulldozer, front-end loader, clam, or scarifier.

KEITH M. HUTCHISON, manager of the Greer Earth Moving School, tells a graduating class to "go yonder and move the earth."

STUDENT puts in his hours on the compactor. The 4,000-ft. airstrip at the school is not only useful for quick trips and parts delivery, but provides valuable practice.

tops

Tops in COMFORT

To men who wear safety hats all day long, comfort is important. And to be comfortable, a hat must fit well and bear smoothly and evenly on the head. Like Jackson's.

Jackson safety hats and caps give you unequaled ease of size adjustment. See for yourself how little it takes to fit the headband to your clearly marked hat size and how firmly it is kept that way. Smooth and flexible, the polyethylene headband (uneffected by temperature, moisture and acids) is firm enough to hold its shape and has a soft-backed leatherette sweatband all around.

Being easy to adjust, men will fit these hats accurately and find they stay on better, even while working in unusual positions and windy weather. And, of course, Jackson chin straps and 'Winterizers' are easily attached in case of really cold and rough conditions.

Tops in STYLE

For men to wear safety hats eagerly and even proudly, appearance is essential. Jackson's protect a man without looking bulky, they have a clean, uncluttered look. They present a shiny, smooth finish, and it is easy to keep them spick-and-span.

Tops in SAFETY

Thorough comparative testing against published, industry-accepted standards proved that Jackson's three types of safety hats and caps, each in its own class, offer an extra margin of safety which should make Jackson your choice. They're tops!

Sold World-Wide through Distributors and Dealers of Welding Supplies and Safety Equipment

Jackson Products

AIR REDUCTION SALES CO., A DIVISION OF AIR REDUCTION CO., INC.

WARREN • MICHIGAN

The 'Top Hat' for Safety . . . the JACKSON 'LIFE GUARD' offers unequalled extra protection to workers in many trades by surpassing both the Edison Institute requirements for line workers' and the Federal Specifications for construction workers' hats. A hat and a cap in white, yellow and grey.

JACKSON FIBER GLASS hats and caps surpass all Federal tests for construction workers' safety hats. In white, grey and six other standard colors. These caps, as well as the Life Guard caps, are also available in combinations with Jackson welding helmets, goggles and a variety of face shields.

JACKSON 'ALUMIHAT and 'ALUMICAP' comply with all Federal requirements (including impact and penetration resistance) except electrical insulation. Aluminum shells have strong, rolled edges, and satin finish to reduce glare. Caps combine with Jackson welding helmets, goggles and face shields.

Circle Item No. 34—Reader Service Card

were brought in by the U. S. Department of Labor. The Department had previously had to hire U. S. contractors and U. S. labor for projects in Spain. Three American Indians signed up in one class last fall. The Indians, a proud people, resent having whites come into the reservations to do their building and maintenance, so they used some of their limited funds to train their own operators.

Some trainees come from the U. S. Bureau of Public Roads. Contractors send operators, and equipment manufacturers send salesmen, to take the course. International Harvester, which has about half a million dollars in equipment at the school, makes frequent use of the facilities.

At the end of each course, the men take a test to let them know what they need to brush up on. During the course, at the first indication that they can't handle a machine, the instructors have a talk with them. They can stay on and keep trying, or drop out—with a refund.

About 70 per cent of the graduates find jobs as operators—the 70 per cent that tried hard to learn. Upon graduation, they are given 30-day permits by the Operating Engineers Union and are accepted as qualified by the contractors.

The school's manager, Keith M. Hutchison, does not claim that a graduate is a finished operator. Hutchison does claim that the graduate knows the fundamentals. He knows what happens if a machine is misused.

Epochs in the FEDERAL SAFETY MOVEMENT

From "Safety Standards," U. S. Department of Labor

World War I

March 1917—First survey of federal working conditions is proposed by chairman of the new U. S. Employees' Compensation Commission. Following survey, 13 safety engineers from private industry are appointed to organize safety programs at Navy Yards and Arsenals.

After the war, interest wanes.

The Twenties

April 1923—Special Committee on safety is appointed by President's representative on organization known as "Washington Safety Council."

Committee makes extensive recommendations which die for lack of support.

The Thirties

December 1935—Secretary of Labor's Conference on Accident Prevention in the Federal Service is organized. Government frequency rate is 60 per cent higher than in private industry.

Conference recommends that Secretary appoint interdepartmental committee to promote safety and health; that Division of Labor Standards provide secretarial service; and that, if possible, "active approval and cooperation of the Chief Executive be secured."

March 1936—A "Steering Committee" recommends safety organizations as warranted in each federal agency, budget financing, and the establishment of a "permanent interdepartmental safety council."

March 1937—President requests Secretary of Labor to chair a committee of five to proceed with organization of permanent council.

June 1937—Federal Interdepartmental Safety Council is organized. Accepts goal of 40 per cent reduction in work injuries by 1942—a goal that is to be thwarted by World War II and its demand for all-out production.

September 1938—First annual meeting of FISC where Articles of Organization are formulated and approved and executive, correlating and nine technical committees selected.

March 1939—Council is given official "independent establishment" status by Executive Order No. 8071. Policy Board established to be composed of six Cabinet officers.

The Forties and World War II

October 1940—Third Annual Meeting reports many federal agencies more than halfway toward five-year goal of 40 per cent reduction in work injuries.

December 1941—Two days after Pearl Harbor!—Fourth Annual Meeting hears Secretary of Navy call for all-out conservation of our skilled work force to "crush our enemies."

Early war period sees great expansion in safety organizations and programs among federal agencies most active in war effort.

July 1946—At request of FISC, the National Safety Council surveys "status of (federal) employee accident prevention" in major agencies. Encouraging progress is reported.

First permanent staff appointed to service FISC.

The Fifties

December 1950—Presidential Executive Order 10194 supersedes FISC with the present Federal Safety Council as advisory arm of Secretary of Labor.

During 1952-53—Organization drive increases Field Safety Councils from 14 to 90 throughout the United States and its territories.

October 1954—President Eisenhower establishes government's highest safety award now given annually to two agencies—one with over 50,000 employees and the other with 50,000 or less.

"We depend on neoprene soles on our safety shoes to protect our record of quality."

MR. BERT LIPSCHUTZ
Vice President
RECORD INDUSTRIAL COMPANY
Philadelphia, Pa.

This statement comes from a company that has been using neoprene soles and heels on its safety shoes for 20 years. These shoes have given outstanding service in heavy construction, shipyards, steel mills, chemical plants and oil refineries.

One chemical processing plant reports that workers have worn RICO safety shoes for 23 months without wearing out the neoprene soles. An oil refinery reports that these shoes normally last 14 to 18 months and sometimes as long as 3 or 4 years — yet the neoprene soles remain intact.

With this background of performance, the Record Industrial Company depends on neoprene for most of its safety shoe styles. Nothing compares to neoprene for all-around resistance to oil and chemicals, abrasion, cutting and cold-weather stiffening and cracking. And with neoprene soles, Record Industrial can offer style to the man who wants a safety shoe he can wear on or off the job.

The reputation made by neoprene soles is important to companies like Record Industrial. You'll find them a lasting asset on all types of work and safety shoes. E. I. du Pont de Nemours & Co. (Inc.), Elastomer Chemicals Department, Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.

NEOPRENE

Better Things for Better Living
. . . through Chemistry

CAMERA IS placed in cell where radioactive materials are handled. By superimposing x-ray film on conventional film, technicians can accurately locate radiation source in areas too hot for proper use of detection instruments.

Pinhole Camera Locates The Hot Spots

Location of radioactive contamination in areas too "hot" for effective use of detection instruments has been made possible by a pinhole camera fashioned from lead and uranium at the Knolls Atomic Power Laboratory (KAPL), operated by the General Electric Company at Schenectady, N.Y., for the Atomic Energy Commission.

The lead camera also can detect small sources of radioactivity which cannot be sufficiently pinpointed by detection instruments, John Payne, GE engineer who designed the camera, said. In addition, it can be used to make conventional photographs of contaminated objects which would fog film in an ordinary camera.

The KAPL camera was developed just in time to aid in cleaning up contamination resulting from a nuclear incident that occurred in December 1953 at Canada's Chalk River atomic plant, Payne said.

There, engineers used the lead camera design to build an identical camera for use in one of the most difficult jobs in the cleanup —locating "hot" spots on apparatus that had to be dismantled.

Pointed toward the general area of contamination, the camera recorded high-level radioactivity sources on film in minutes rather than days needed to locate these pockets of radioactivity with conventional detection instruments.

Basically, the camera is of the simple pinhole variety that any high school physics student might build. However, this camera carries two types of film. One makes conventional light negatives; the other, an x-ray film, records atomic radiation.

After development, the x-ray film can be superimposed on the conventional film to pinpoint the location of dangerous radiation sources.

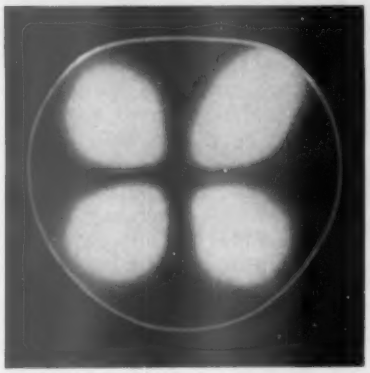
Usually about 12 minutes is needed to expose the conventional film and at least an hour for the x-ray film. In many areas of high-level radioactivity where this camera would be used, Geiger counter and other detection instrument operators would not be allowed to enter or might have to spend days locating various radiation sources.

The entire camera is approximately the shape and size of an old-fashioned box camera. Outside dimensions of the lead box, Payne said, are 4¾-in. long, 5-in. high and 3½-in. wide. Over-all weight is 29 lbs.

FILM HOLDER is placed in lead pinhole camera designed for locating contamination in areas of high-level radioactivity. One holder carries conventional film to make a light picture of area. Second holder, placed behind light film, carries x-ray film to record location of radioactive sources. Pinhole to admit light and aluminum window to admit radiation are in uranium lens barrel in center of camera. Remainder of 29-lb. camera is made of solid lead.

The truth about those patterns in toughened Safety Lenses

For years, industrial safety lenses have been accepted or rejected for impact resistance on the basis of a "cross" pattern revealed when the lenses were viewed through the polarizing elements of a polariscope. Pet ideas grew as to the characteristics and significance of these crosses. Generally, the more symmetrical and clearly defined the cross pattern . . . the higher the impact resistance was thought to be.



This is the "Maltese cross" pattern which used to be considered ideal.

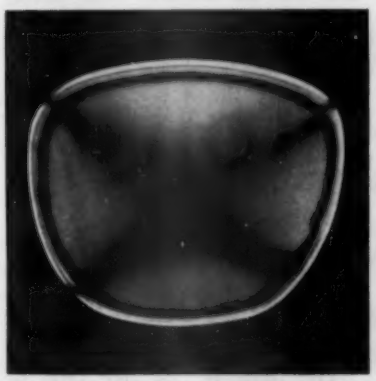
As you know, industrial safety lenses are toughened by heat treating and quenching. Temperature is raised almost to the softening point. Then the lens is quenched, or chilled, by blasts of cool air against its surfaces. The result is an outer glass layer which shrinks and enters a state of compression, while the inner mass achieves a permanent condition of tension. Technically, the lens is said to be "reinforced." It is this state of compression-tension balance that helps to produce the polarized pattern.

The truth is that the cross pattern proves only that the lens has been heat treated. It does not reflect the *degree* of shock resistance. *Cross patterns don't tell you how safe . . . or unsafe . . . the lenses are!*

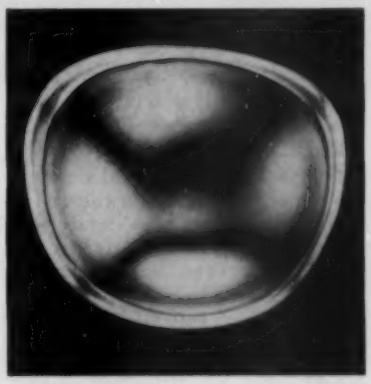
More specifically, the cross pattern reveals only that a compression-tension balance exists, and that the cooling quench was directed near the center of the cross. It tells nothing of impact or thermal shock strength or the compression-tension ratio so important to eye protection.

Some time ago Bausch & Lomb began to employ a large orifice chill, using generous quantities of air at carefully controlled temperatures. The entire lens surface got the blast at once. Researchers found that lenses quenched in this manner have exceptionally high impact strength for frontal and edge blow . . . withstanding impact ranging from a minimum of 6 to substantially more than 10 times that of the contemporary accepted standard.

But with this improved method cross patterns virtually disappeared! When viewed in the polariscope, those bugaboo cross patterns were weak, almost lost against an over-all dark area, or altogether nonexistent. In the case of prescription safety lenses, patterns were "scrambled"—and the scrambles varied all over the lot according to the type and strength of the prescription.



The regular, peripheral dark line, well inside the lens edge, means more to the lens technician, and the wearer, than the cross pattern.



This prescription safety lens of high minus power will withstand at least 6 times the shock of the contemporary accepted standard.

The fact today is that one can no more gauge the margin of safety in a safety lens by its cross pattern than he can judge the condition of a used car by the lustre of its finish. Best way to know the quality of protection you get: run your own laboratory impact tests, or rely on the integrity of the manufacturer . . . or both.

THE SAFETY LIBRARY

Books, pamphlets and periodicals of interest to safety men

Compiled by Ruth Parks, Librarian, NSC

Toward Safer Flying

Danger in the Air, by Oliver Stewart, Philosophical Library, New York. 1958. 194 pages, index.

"AIR ACCIDENTS can be both interesting and instructive." This seemingly callous statement by the author becomes more understandable as the reader progresses through the well-planned book.

Each of the 18 chapters describes a significant crash in detail, and points out what was learned (or should have been learned) in the investigation.

Mr. Stewart speaks with the authority of a lifetime in aviation. He flew for the British in World War I.

The author does not attack the press for publicizing air accidents. He believes that the drama, the suddenness, and the finality of aircraft mishaps make them newsworthy and makes no appeal for restraint in reporting. He believes that frank discussion of aviation's problems will clear up its problems faster and advance the industry.

Freak accidents have received more than their share of attention, the author says. The Empire State Building crash was spectacular, for instance, but the investigation uncovered little that could be used in prevention of a similar accident.

Pilots, who certainly have the primary concern in crash prevention, do a great deal of talking about crashes. This is as it should be, since this is the way to learn from others' mistakes. Mr. Stewart reports a strange reaction among pilots on this point. Pilots often find accidents funny.

The first accident treated is that of the dirigible *R 101*. This accident led to the decision to abandon work on large rigid airships in England. Later, the Hindenburg disaster convinced world opinion that this type of craft was not airworthy.

A misprint on a navigational chart cost 40 lives in the crash of a Royal Dutch Airlines *Constellation*. An elevation marking of "45 ft." should have been "450 ft." A second map carried in the cockpit showed the same error. Following his charts, the pilot let down and struck high-tension wires, also not mentioned on the chart.

Other chapters describe accidents involving hard-to-read instruments, crew fatigue, confusing voice codes, control locks, reversed controls, ground controller errors, maintenance mistakes, criminal intent, icing, collision, and fire in the air. Through every account runs the author's theme: The pilot's responsibility is shared with everyone concerned with aviation, from high government officials to hourly workers at the airport.

The series of *Comet* accidents belong in a class by themselves. The author calls them "the price of pioneering." The findings affected the design of all jet aircraft. Prime cause of the mysterious mid-air failures was metal fatigue from constant pressurizing and depressurizing.

It is impossible to read far in *Danger in the Air* without making comparisons of air crashes and industrial accidents. It is so easy to say "pilot error" when there is a last slim chance that a pilot might have pulled out of difficulty. Pilot error continued to be the most popular finding, even as more responsibility was turned over to weather specialists, instruments, and ground controllers.

The familiar "85 per cent of these accidents are caused by human failure" comes readily to mind.

JAMES D. SAUL

Environmental Sanitation

The Practice of Sanitation, by Edward Scott Hopkins and William Henry Schultze. Published by The Williams & Wilkins Co., Baltimore 2, Md. Third Edition, 1958. 487 pp., index. Price $8.

THE FRUITS of efforts in the field of sanitation are conspicuous everywhere in many countries by the reduction or virtual elimination of insect, sewage and rodent-borne diseases, such as malaria, typhoid, typhus, cholera, and dysentery. Measures for the protection of drinking water, disposal of sewage, safeguarding of food, and elimination of pests have paid enormous dividends in the saving of lives and in economic and social benefits to millions of people.

Sanitation and public health programs have made vast areas habitable. Yet more than three-fourths of the world's population have not received the benefits of sanitation as we know it.

This book is primarily for the health officer, sanitarian, physician, and nurse in the public health field but some of the chapters will be of practical interest to industrial safety men and sanitation managers. The chapter on industrial sanitation covers briefly the principles of lighting, noise control, drinking water, washroom facilities, food service, and housekeeping.

Also applicable to industry are the sections on stream pollution and industrial wastes, air pollution, ventilation, public transportation, and pest control.

Attempting to cover such a wide field in one volume inevitably results in lack of detailed information on the various phases of the subject. The authors, however, have provided a good introduction to environmental sanitation and extensive bibliographies with each chapter.

CARMAN FISH

Noise in the Foundry

Foundry Noise Manual. 1958. American Foundrymen's Society, Inc., Wolf and Gold Roads, Des Plaines, Ill. 50 pp. Cloth bound. $3 to members. $4.75 to non-members.

THIS PUBLICATION is the result of work done by the Noise Control Committee of the Safety, Hygiene, and Air Pollution Control Pro-

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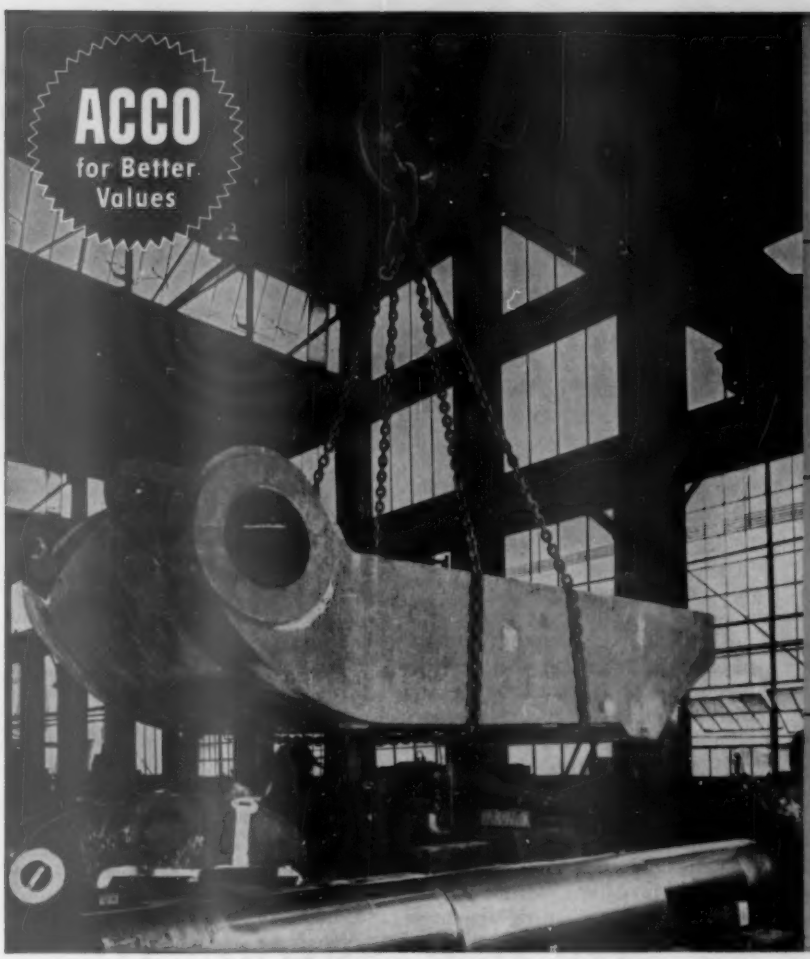

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Circle Item No. 37—Reader Service Card

Habituating Drugs

There are hundreds of nerve depressants and stimulants available today. How does their use affect industry?

By R. G. BELL, M.D.

TO BE considered "habituating," a drug must be able to produce some type of welcome effect, such as relieving unpleasant states—pain, tension, frustration, or depression, or producing the exaggerated sense of well-being called euphoria.

Clinical experience in the past eleven years has convinced me that any drug that could be considered a nervous system depressant or a nervous system stimulant can be classified as "habituating." In 1800 there were only a few substances that could qualify as habituating drugs; today there are hundreds.

Addiction. Addiction may be defined as, "A way of life that involves repeated or continuous dependence on harmful quantities of any chemical capable of producing welcome effects." Since harmful or toxic quantities of a particular chemical are involved, sooner or later disease results from chronic toxic exposure.

Thus, there are two distinct but interrelated clinical problems encountered in the addictive process: the "way of life" itself in which the individual depends on chemicals rather than on latent resources within himself and other people, and physical changes resulting from acute and toxic effects of the chemical or chemicals on which he depends.

DR. R. G. BELL is Medical Director, the Bell Clinic, Willowdale, Ontario, Canada. This article has been condensed from a paper presented at a joint session of the American Industrial Hygiene Association, the Industrial Health Association at the 85th annual meeting, Cleveland, Ohio, November 14, 1957. Papers presented at this session were published in full in *American Journal of Public Health*, May 1958.

Ethyl Alcohol. Today many industries are at least willing to admit that some of their employees drink too much. A few will not even accept this possibility. Others have established a program of early recognition, treatment, and rehabilitation of alcoholic employees.

Results of these programs are not generally in keeping with the publicity given them, although the new interest is encouraging and the necessary precursor to more effective clinical developments.

In the industries studied in a sample area in Ontario by the Alcoholism Research Foundation, six per cent of the employees were considered to have a recognizable problem with alcohol. Since Monday morning absenteeism was one of the criteria used in the study, from a clinical standpoint, this could be interpreted as indicating that six per cent of employees had advanced far enough into alcoholic disease to be suffering withdrawal reactions—a condition they soon learn to treat by a morning drink.

The six per cent considered to have alcoholic disease averaged 18.5 days absenteeism per employee per year.

In industry, much addictive drinking can remain hidden until late stage manifestations of addiction or disease bring it to light. We wait for the phenomenon of recurrent "drunkenness" or absenteeism to signal the presence of problems which have involved alcohol intake in toxic quantities without drunkenness or absenteeism for years.

Psychiatrists, internists, sociologists, and others have conflicting opinions as to the main cause of excessive use. Even from a clinical standpoint there is still no agreement as to when the use of alcohol could be considered excessive. There is still no agreement on terminology, on clinical procedures, on evaluation of treatment results, or even upon areas of research.

If alcohol can be used for years in harmful quantities without detection, how much more can this apply to many of the other habituating drugs that do not even give an easily recognizable odor to the breath. Unfortunately, we know still less about them than we do about alcohol.

Barbiturates and the older depressants. These include barbiturates, bromides, paraldehyde, and chloral hydrate. At various times I have had to treat patients addicted to them. The physician who has not yet supervised treatment of the withdrawal reaction to barbiturates should try it just for the experience. It would do more to bring about caution in the administration of barbiturates than any number of papers on the subject. Most of the addicts I have known were first alcohol addicts who had shifted to barbiturates either on their own or with medical assistance.

Tranquilizers. Within the past few years there has been introduced a new group of nervous system depressants known as tranquilizers. They have revolutionized the treatment of many psychiatric diseases and, as such, constitute a significant advance in therapeutics.

We have already had to treat a few patients addicted to tranquilizers. All who have come to our attention to date had formerly been addicted to alcohol. In Can-

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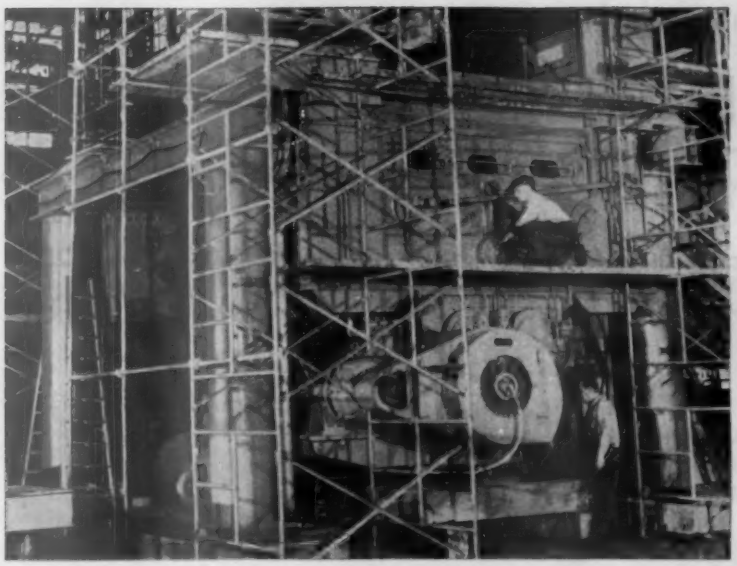
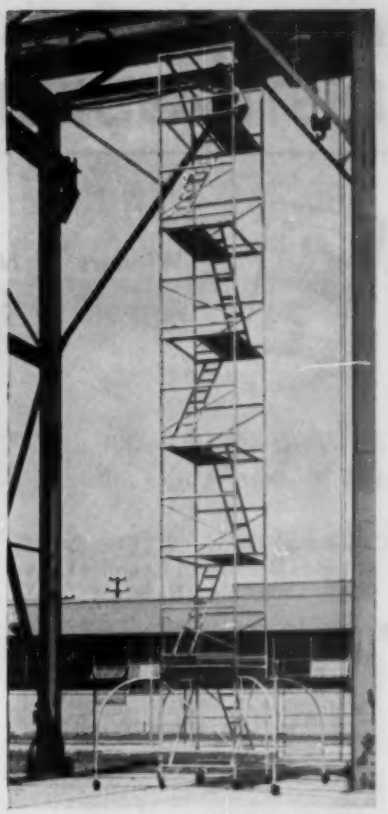


GIANT PRESS DRY-RUN—To speed a "dry-run" on this huge metal press built by Alco Products, Inc., Schenectady, N. Y., "Trouble Saver"® Steel Scaffolding mason frames with patented SlideLoks, front, and "TubeLox"® tube and coupler Steel Scaffolding at sides and rear give assembly and testing crews safe, sturdy working platforms. Versatile "TubeLox" Scaffolding, even though it consists of only four basic parts, is used to scaffold plant structures of any shape, size or contour. Prefabricated "Trouble Saver" Scaffolding frames, in a wide choice of styles and sizes are joined by pivoted, diagonal braces to give various spacings.



GETTING UP TO A CRANE—The Public Service Electric & Gas Co., Bergen County Switching Station, N. J., uses a 36'9¼"-high Model B Aluminum Sectional Rolling Scaffold, with outrigger supports, to repair a crane. These and other PS Co. rolling and stationary scaffolds, extension and platform ladders, "Midget"® and "Junior"® Safety Swinging Scaffolds, help speed-up off-the-ground jobs.

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It would pay you to get the facts on how modern PS Co. Scaffolding and Ladders can help you speed up your plant operations with utmost safety. PS Co. offers complete engineering service available locally. See the Yellow Pages of your telephone directory for the name of the nearest Patent Scaffolding Company office or representative that sells or rents "Gold Medal"® Scaffolding and Ladders. A free consultation may save you many dollars. For more information write for Bulletin G-205R.

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General Electric Co., Appliance Motor Dept., DeKalb, Ill.

W. R. Grace & Co., Grace Chemical Div., Memphis, Tenn.

Joy Manufacturing Co., Michigan City, Ind., Plant.

Kentucky Utilities Co., Old Dominion Power Co., Mountain Div., Pineville, Ky.

Monsanto Chemical Co., Trenton, Mich., Plant.

The Nestle Co., Fulton, N. Y.

North American Aviation, Inc., Missile Div., Downey, Calif.

Olin Mathieson Chemical Corp., Film Div., Olin Works, Covington, Ind.

Sandia Corp., Livermore, Calif., Branch.

Joseph E. Seagram & Sons, Inc., Old Farmers Distillery, Athertonville, Ky.

Shell Chemical Corp., Torrance, Calif., Plant.

Sinclair Refining Co., Manufacturing Div., New York, N. Y.

St. Regis Paper Co., Machine Shop, Rumford, R. I.

The Texas Co., Refining Dept., Port Arthur, Tex., Package Division.

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American Viscose Corp., Fredericksburg, Va., Plant.

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Mississippi Power & Light Co., Southern Div., McComb, Miss.

PRESIDENT'S LETTER

American Brake Shoe Co., two awards: American Manganese Div., Hq., Chicago Hts., Ill.; Dominion Brake Shoe, Hq., Montreal, Canada.

FOUR AWARDS are given by the National Safety Council to members in recognition of outstanding achievement in accident prevention:

1. Award of Honor

Available to (a) units which complete 3,000,000 man-hours without a disabling injury, and (b) units whose records, though not perfect, meet exacting standards. These standards take into account the previous experience of the unit as well as the experience of the industry in which it operates. A unit must qualify on both frequency and severity rates.

2. Award of Merit

Has similar but less exacting requirements. Minimum number of man-hours is 1,000,000.

3. Certificate of Commendation

For injury-free records covering one or more calendar years and totaling 200,000 to 1,000,000 man-hours.

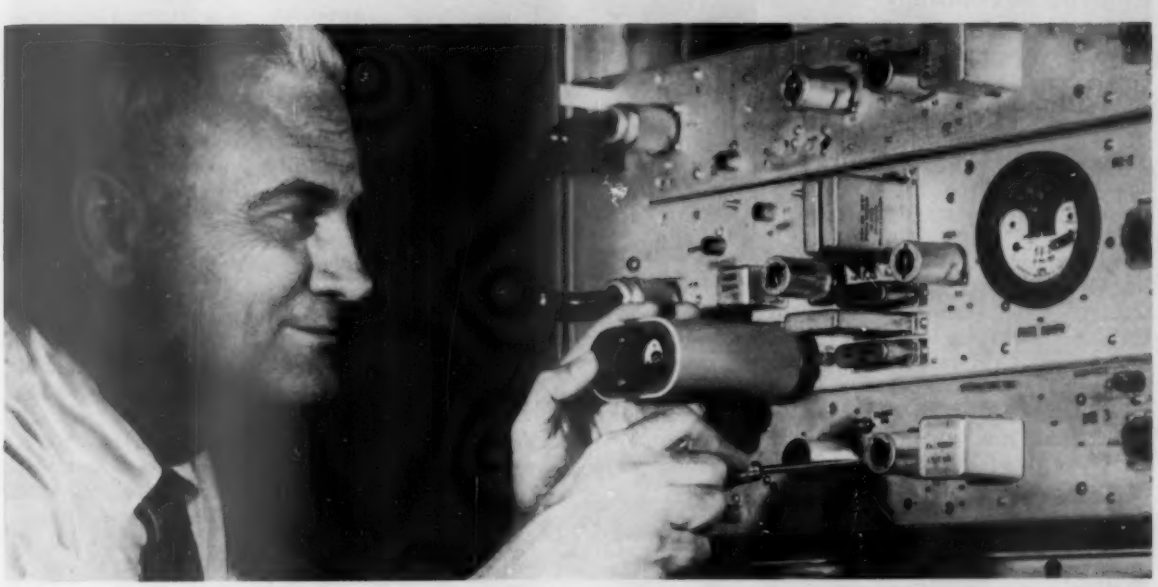
4. President's Letter

For injury-free records covering one or more calendar years and totaling less than 200,000 man-hours.

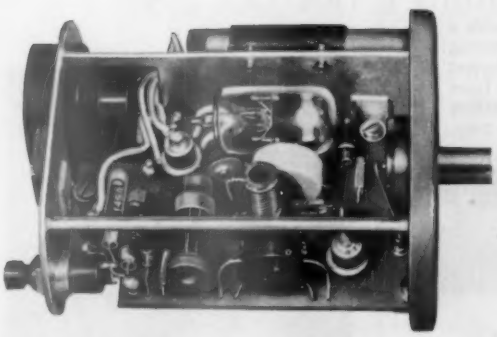
Details of eligibility requirements may be obtained by writing to Statistics Division, National Safety Council.

SECRETARY of the Army Wilber M. Brucker (left) accepts on behalf of the Army the National Safety Council Award of Honor presented by Major General George C. Stewart (2nd from right), U. S. Army, Ret. Executive Vice-President, National Safety Council, as Mr. Thomas H. Wilkenson, (2nd from left), U. S. Army Director of Safety, and Assistant Secretary of the Army Frank H. Higgins (right), look on. The ceremony was held at the Pentagon, Washington, D. C.

Bell Laboratories Develops Pocket-Sized Frequency Standard for Microwave Systems



Lawrence Koerner, who developed the portable frequency standard, demonstrates how the device can be plugged in at a radio relay station to supply a checking frequency. Battery-powered, the device maintains precision calibration for several months.



Inside the portable frequency standard. Four Laboratories-developed devices make it possible: (1) transistor, which converts the power from a battery to radio frequency oscillations; (2) voltage reference diode, which maintains constant voltage; (3) piezoelectric crystal unit of superlative stability; (4) thermistor, which corrects for temperature variations.

Microwave radio relay systems depend critically on the accuracy of their "carrier" frequencies. At scores of relay stations along a route, carrier frequency oscillators must be checked periodically against a signal from a precise standard.

In the past, the maintenance man has had to obtain his checking frequency by picking up a standard radio signal from a government station. This operation takes time – and requires elaborate equipment.

With a new *portable* frequency standard developed by Bell Telephone Laboratories engineers, the job is much simplified. To check an oscillator, the portable standard is plugged in, and a button is pressed. In seconds, it supplies a checking frequency accurate to one part in a million.

Until now, such precision in a frequency standard has been obtainable only in a laboratory. The new portable standard makes it available for routine use in the Bell System. First use of the standard will be to maintain frequency control in a new microwave system for telephone and TV, now under development at Bell Laboratories. Other potential uses include on-the-spot maintenance of closely spaced channels of commercial and military communication systems.

BELL TELEPHONE SYSTEM

PERSONALS

News of people in safety and related activities

Hygiene Foundation Announces Appointments

The Board of Trustees of the Industrial Hygiene Foundation announced at the 23rd Annual Meeting on October 29 and 30 the election of DR. WILLIAM P. YANT, director of research and development at Mine Safety Appliances Company, as chairman, Board of Trustees; and the appointment of DR. H. H. SCHRENK, research director of the Foundation since 1949, as managing director to succeed DR. C. RICHARD WALMER, who is returning to private medical practice.

Dr. Yant and Dr. Schrenk are experienced in industrial and public health. Dr. Schrenk directed the Donora smog investigation for the U. S. Public Health Service, and is a recipient of the Donald E. Cummings Memorial Award from the American Industrial Hygiene Association for outstanding contributions to his profession.

Dr. William P. Yant

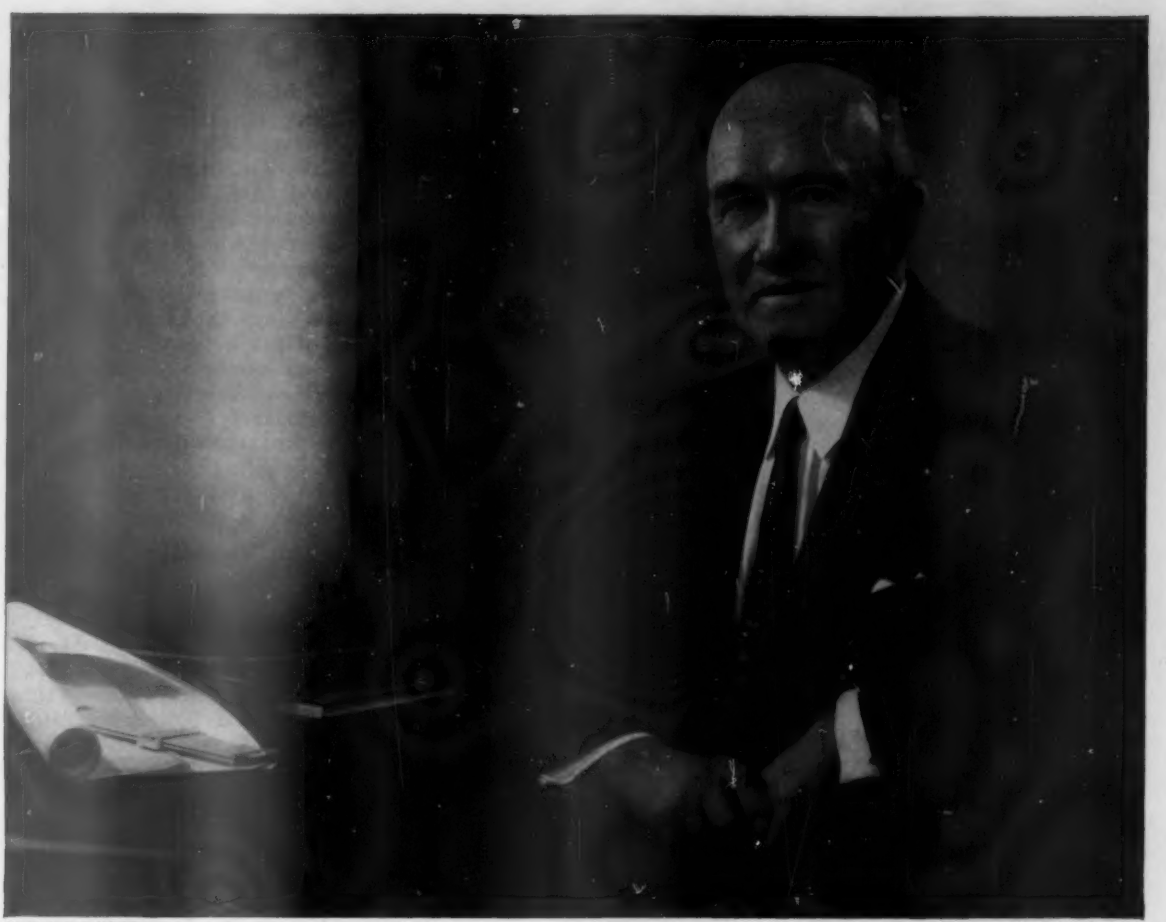
Dr. Yant recently received the Arthur Williams Medal of the American Museum of Safety for "outstanding contribution to the conservation of human life." Dr. Yant has inventions covered by 66 domestic and foreign patents.

Dr. Yant participated in the formation of Industrial Hygiene Foundation and has served as a trustee since its inception. The Foundation, established at Mellon Institute in 1935, is a nonprofit research organization of about 400 companies and industrial associations. Its purpose is to improve health conditions in industry, a program involving a staff of physicians, chemists, engineers, biochemists, and medical technicians, all specialists in industrial health problems.

Dr. Schrenk, the Foundation's new managing director, received his undergraduate and graduate training at the University of Wisconsin and was the assistant toxicologist of the State of Wisconsin from 1923 to 1928. From 1928 to 1948, he was associated with the U. S. Bureau of Mines, where he was chief of the health branch. He then joined the U. S. Public Health Service as chief of the Environmental Investigations Branch in the Industrial Hygiene Division.

Dr. Schrenk has served as director and president of the American Industrial Hygiene As-

Dr. H. H. Schrenk



CLIFFORD F. HOOD

Portrait by Fabian Bachrach

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"Those enrolled in the Payroll Savings Plan for U.S. Savings Bonds alone save the equivalent of one and one half $25 bonds a month.

"For those investing in U.S. Savings Bonds under the Savings Fund Plan, each is averaging more than one $25 bond per month.

"The response of our employees to the Payroll Savings Plan for Savings Bonds is evidence of their faith in the nation. We are proud of their record in saving systematically in E Bonds, thus participating in a program of planned thrift while helping to build America's power to keep the peace."

CLIFFORD F. HOOD, ***President and Chairman, Executive Committee, United States Steel Corp.***

Today there are more Payroll savers than ever before in peacetime. If employee participation in your Payroll Savings Plan is less than 50% . . . or if your employees now do not have the opportunity to build for their future through the systematic purchase of U.S. Savings Bonds, give your State Director an opportunity to help. Look him up in your phone book. Or write: Savings Bonds Division, U.S. Treasury Dept., Washington, D.C.

NATIONAL SAFETY COUNCIL

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sociation; chairman of Pittsburgh Section and councilor of the American Chemical Society; chairman, Industrial Hygiene Section of the American Public Health Association; and president of the Pittsburgh Chemists' Club. He is the author of more than 100 papers dealing with industrial hygiene subjects and has served on numerous committees of professional and governmental organizations.

Dr. Yant has been chairman of Pittsburgh Section and councilor of the American Chemical Society; the first president of the American Industrial Hygiene Association; president of the American Society of Safety Engineers; and director of the National Safety Council. In addition to the Arthur Williams Medal, he has received the Pittsburgh Award and the Donald E. Cummings Memorial Award. He has been active in committees of the American Standards Association, National Research Council, American Medical Association, and American Society for Testing Materials.

Motley to Head Labor Standards Bureau

ARTHUR W. MOTLEY, a career employee with 38 years in Government manpower and employment programs, has been appointed director of the Bureau of Labor Standards. Since 1948 he has been assistant director of the Labor Department's Bureau of Employment Security in charge of the United States Employment Service.

A native of Cleveland, Mr. Motley's career in the Employment Service began in 1920 when he became manager of the State Employment Office, Erie, Pa. In 1933 he was appointed state director of the Pennsylvania State Employment Service.

In 1936 he moved to Washington to accept a post with the Social Security Board and was subsequently appointed chief of the Field Management Division. During World War II he was transferred to the War Manpower Commission. He returned to the Social Security Board in 1944 and was named assistant director of

the Bureau of Employment Security which was returned to the Department of Labor after the war.

In 1949 he served as consultant to the Migratory Labor Committee of the International Labor Organization. He is chairman of the Joint Inter-Departmental Committee on Essential Activities and Critical Occupations, as well as the Department of Labor's representative on the Inter-Departmental Industrial Defense Committee and the Committee on Specialized Personnel.

Parmalee Heads Veterans of Safety

ALFRED F. PARMALEE, president, U. S. Safety Service Co., was elected president of the Veterans of Safety at the Annual Meeting, October 20, 1958.

Other officers elected were:

First Vice-President — E. Willard Merritt, Walter G. Legge Co., New York.

Second Vice-President—Joseph H. Travers, Accident Prevention Bureau, Pacific Maritime Assn., San Francisco.

Secretary-Treasurer — Howard Chatfield, Minneapolis.

Regional vice-presidents elected were:

Northern — Robert P. Douglas, Royal Oak, Mich.

Eastern — Clyde C. Ruddick, Pittsburgh Plate Glass Co., Pittsburgh, Pa.

Western — Richard Wilkins, North American Aviation, Inc., Los Angeles.

Southern—Edgar C. McFadden, Dallas, Tex.

International—John H. Bourne, Toronto, Ont.

Trustees, with respective dates of the expiration of their terms, are:

Albert C. Blackman, San Francisco (1961).

Arthur J. Naquin, New Orleans Public Service, Inc., New Orleans (1960).

G. Stuart Mansfield, Western Printing and Lithographing Co., Poughkeepsie, N. Y. (1959).

The Veterans of Safety will

publish in September, 1959, a book containing biographies, portraits, and specialties in safety engineering of all members. These books will be furnished without charge to all engineering college libraries so engineering students can receive the benefit of specialized experience by writing to those listed on a specific subject. This service is being offered as a contribution to the training of future engineers at no cost to the student.

These books will be available to all other college, high school, and public libraries at $2 to cover cost of publication.

New FEMA Directors

Two vacancies on the board of directors of the Fire Equipment Manufacturers Association were filled during a meeting of this national trade group in Chicago on October 17.

Newly appointed FEMA board members are A. C. Trautwein, vice president in charge of marketing, The Fyr-Fyter Co., Dayton, Ohio, and Stewart Boal, president of Randolph Laboratories, Inc., Chicago.

Ahern Named to New GM Post

Appointment of JOHN J. AHERN to the newly-created position of Director of Security for General Motors has been announced by Louis G. Seaton, GM vice-president in charge of personnel staff.

Since 1945 Mr. Ahern has been professor and director of the Department of Fire Protection and Safety Engineering at Illinois Institute of Technology, Chicago. He has served as consultant to General Motors on fire protection since August 1953.

Mr. Ahern will be responsible for coordinating with GM divisions practices in safety, plant protection, and fire protection.

Following graduation from Illinois Institute of Technology with a degree in fire protection engineering in 1935, Mr. Ahern worked as fire protection engineer for the Michigan Inspection Bureau. He served as a special

agent for an insurance company for several years before joining the U. S. Ordnance Department in 1942, for which he conducted war training programs in explosives and industrial safety.

Mr. Ahern is a member of the Civil Service Commission in Chicago, and past president of the Greater Chicago Safety Council. He served as the first president of the Society of Fire Protection Engineers.

He was secretary of the President's Conference on Fire Prevention in 1947 and has acted as consultant for major insurance, industrial and utility companies, as well as the Chicago Fire Department.

Steiner Succeeds Burnell in Medical Job

DR. S. D. STEINER has been appointed medical director for General Motors, succeeding DR. MAX R. BURNELL, who retired November 1.

Dr. Steiner, medical director for Oldsmobile Division of General Motors in Lansing since 1946, had devoted his medical career to the field of industrial medicine.

Born in Clarington, Ohio, 45 years ago, Dr. Steiner received his medical degree from Northwestern University Medical School in 1935. He served his internship at University Hospital in Pittsburgh and then became public health officer of Brooke County, W. Va. In 1939 he received a Rockefeller Foundation Scholarship to Harvard University. He received his master's degree in public health from Harvard in 1940.

After serving for another year as public health officer in Brooke County, he joined the U. S. Public Health Service in its division of industrial hygiene in 1941. In 1942 he became a staff member of the industrial hygiene division of the Maryland State Health Department, and served there until 1944. At this time he joined the Cadillac Division as plant physician, and in 1945 went to Oldsmobile in the same capacity. He was made medical director of Oldsmobile a year later.

Gunpowder mixing unit consists of two screw agitators housed in a one-inch-thick tally bowl. Top portion of the bowl and agitator troughs are fabricated of Ampco Metal plate; bottom ends are sand-cast of Ampco Metal.

Makes explosives mixing less explosive!

One of two screw agitators cast of Ampco Metal and then machined.

Hazards minimized by mixer of spark-resistant AMPCO® METAL

As a safety engineer, you know the value of using Ampco Safety Tools for low-cost protection in areas where a hot spark might cause fire or explosion. But did you know that the same metal used in these tools is often fabricated into equipment to reduce the hazards of dangerous manufacturing operations?

Take the job of mixing gunpowder, for example. It's such a touchy process that mixing areas are confined to concrete cells or blast-houses. Because the ingredients in gunpowder mixes are so unstable, the greatest care must be exercised in using mixing tools.

That's why so many leading explosives manufacturers use mixers fabricated of Ampco Metal. It not only resists sparks—it also resists the corrosive and highly abrasive effects of gunpowder mixes. (Your production and maintenance people like that.) One powder-plant manager reports that his Ampco mixer has outlasted other types by two to one!

Does this suggest any application for Ampco Metal in *your* plant? Talk it over with your production men — and with an Ampco field engineer. Or write for details. *Ampco Metal, Inc., Dept. 208-A, Milwaukee 46, Wis. West Coast plant: Burbank, Calif. — Southwest plant: Garland (Dallas County), Texas.*

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AMPCO®

AMPCO

Circle Item No. 43—Reader Service Card

Ship Spent Atomic Fuel In Lead-Shielded Casks

Spent fuel elements from atomic reactors are now being shipped in giant casks of stainless steel buttressed by an 11-in. shield of lead. Developed by Ameray Corporation, Kenvil, N. J., the casks weigh about 10 tons each and are fabricated of two layers of stainless steel with an intermediate layer of lead. The lead shields weight about 8½ tons. They were cast by Federated Metals Division of American Smelting and Refining Company.

To shield the high radioactivity and to extract the heat emitted by the spent fuel elements, sound porous-free castings were necessary. High heat conductivity also was required at the joining faces of the steel and lead. The Perth Amboy Plant of the Federated Metals Division accomplished both of these requirements by special casting techniques. Refined lead assured the maximum possible bond between lead and steel. Existence of satisfactory conductivity at the interface between steel and lead was confirmed by heat transfer tests on each container.

Tests using Cobalt 60 as the radiation source checked the lead casting for freedom from porosity, a primary requirement in making radiation shielding effective against gamma rays. With 1200 curies of Cobalt 60 emitting 525,000 roentgens per hour inside the cask, meter readings on the surface of the cask showed only 0.1 milliroentgens per hour. This was the lowest level within the range of the meter, suggesting that readings on more sensitive scales might be far below 0.1 milliroentgens per hour.

NEWS INDEX READY

The Index to the NATIONAL SAFETY NEWS for July-December, 1958 (Vol. 78), is now available. Address requests to: The Library, National Safety Council, 425 N. Michigan Ave., Chicago 11.

AIRLINES' RECORD

1957 performance

second best of all time

AMERICA'S domestic airlines achieved their second best safety record of all time in 1957, The Daniel and Florence Guggenheim Aviation Safety Center at Cornell University has announced.

Scheduled domestic airlines carried 45-million persons an estimated 25½-billion passenger-miles with loss of 31 lives, while nonscheduled carriers flew an estimated 800-million passenger-miles without a fatality, according to the Center.

Scheduled airlines' 1957 fatality rate of 0.1 per hundred-million passenger-miles was a marked improvement over the 1956 rate of 0.62, and only slightly above the all-time low of 0.07 per hundred-million passenger-miles set in 1954.

Scheduled international carriers recorded 36 deaths in 1957 for a fatality rate of 0.6 per hundred-million passenger-miles, as against a perfect safety record in 1956. All 36 fatalities last year resulted from a single ditching in the Pacific Ocean.

Jerome Lederer, director of the Safety Center, warned that safety research for conventional aviation, already complicated by introduction of steep-gradient and high-performance aircraft, will suffer from the federal government's diversion of equipment, personnel, and funds to problems of space flight.

Observing that the National Advisory Committee for Aeronautics has reoriented its organization to deal with space flight, Mr. Lederer said most safety research from now on will require the support of industry in place of government.

In the recently-published 1958 Annual Supplement to its survey of research projects in aviation safety, the Cornell-Guggenheim Center cited demands for "crash" programs in missiles and satellites, and exhortations to improve scientific education.

The Center urged Congress and aviation-research agencies not to lose sight of "the relatively modest amounts of research and development which have a vital relation to the safety and security of a strong aviation industry."

Airlines' Greatest Challenge

In listing 10 areas or "gaps" where more emphasis on safety research is urgently needed, the

Safety Center warned that airlines are facing the greatest challenge ever to confront a transportation system in connection with introduction of turbine-powered aircraft.

The report observed the fast-approaching era of jet transports will bring many problems affecting training, maintenance, communications, traffic control, meteorology, passenger accommodations, and airport design.

Present schedules call for the first domestic jet transport flight before the end of 1958, with 30 planes to be delivered by June 1959, and 215 a year later.

While all these areas are being studied carefully, "integration into an operating pattern will be attended with many difficulties that are now only dimly seen."

So far as measures to control air traffic are concerned, the Center pointed out that "for a long time to come, the great majority of vehicles on our airways will be propeller-driven, unpressurized, relatively low altitude business planes." Aircraft of this type numbered nearly 30,000 in 1957, compared with 1,800 airline transports and 24,000 military aircraft.

"Current and near-future planning should take this fact into account, while also allowing for the high-altitude, high-speed operations of the new transports, as well as the large number of personal aircraft," the report said.

Equipment and procedures being developed should permit lightweight, low-cost airborne components, capable of being operated by non-professional business or private pilots, rather than being designed for multi-engined transports with highly trained crews.

"Factors of airport and runway adequacy, the necessity for rapid and large-scale diversion of aircraft when severe weather blocks out a terminal area, and all types of in-flight emergencies must be considered in developing the system for practical, foolproof, safe application.

"Use of operations analysis in future planning is commended, but it is vital that the development *and installation* of improved equipment, both ground and airborne, be implemented by Congress at an early date, including provision of funds for training personnel to operate the equipment."

Although much attention is being given to developing electronic warning devices to avoid mid-air collisions, "even more concentrated effort is demanded by the urgency of this critical problem," the Center said.

While air traffic control reduces danger in terminal areas, and is being extended by the airlines in the "Golden Triangle" region of Boston-Washington-Chicago and to high altitudes nationwide, "a weakness exists in that there are no mandatory provisions for controlling air traffic at high altitudes, where the problem is becoming increasingly acute."

Crash-Fire Protection Lag

Although the National Advisory Committee for Aeronautics completed research on crash fire protection for aircraft with reciprocating engines more than four years ago, and on turbine-engined

aircraft more than a year ago, including development and testing of a proved pressurized water extinguishing system, no transport to date has been fitted with such crash-fire protection, the report noted.

"Tensions among crew members, created by jurisdictional disputes, obviously have no place in a safe cockpit," the Aviation Safety Center said and warned that safety should not be jeopardized by conflicts which should be settled outside the plane.

Improved performance has put a premium on fast, accurate judgment and crew coordination.

Jet aircraft will impose even greater strains on all operating personnel because of better performance, high operating costs, and need for much greater precision in operation.

Safety Research "Gaps"

Other areas in which the Center sees urgent need for further research are:

1. **Occupant protection,** in which tested improvements in seats, belts, doors, exits, floors, and cabin structure already are available.

2. **Crash rescue beacon,** for lack of which military and civilian aircraft continue to be lost at sea or over uninhabited areas each year despite availability of several pieces of equipment able to reduce this hazard.

3. **Weather forecasting.** The report said no amount of money spent on air-traffic control, jet transports, or hypersonic aerodynamics is of any help when severe weather blocks off a major airport and multiplies congestion for 1,000 miles around.

"Fail-safe" developments permitting all-weather landings are needed, together with a more complete network of weather stations, including automatic surface and sounding balloon stations to improve en-route observations and forecasts. More funds also are needed for weather research, especially in view of turbine-powered operations.

4. **Steep-gradient aircraft.** "The complexity of VTOL (vertical takeoff and landing) and STOL (short takeoff and landing) projects misrepresent their safety potential, which is slow-speed controlled landings and takeoffs, permitting operations from many more small airports or even unprepared fields," the report declared. Introduction of small turbine power plants should do much to reduce this complexity to more manageable limits.

5. **Private flying hazards.** Observing that about 65,000 general aviation aircraft flew about 10,000,000 hours in 1957, as compared with the airlines' 1,800 planes and 3,500,000 hours, the Center warned "this very substantial portion of air traffic must be given consideration in planning airways, airports, communication, and navigation facilities."

Principal hazards for light aircraft are inadequate training, spiral instability, and flight into adverse weather, according to the report, and "a large and difficult problem" looms ahead in retraining private pilots in the latest techniques.

New developments promise soon to overcome spiral instability. This will undoubtedly add to the number of private pilots flying in severe weather, and will multiply problems of air-traffic control and enforcement.

The Aviation Safety Center was established by The Daniel and Florence Guggenheim Foundation in 1950 to foster improvement of aviation through research, education, training, and dissemination of safety studies to the aviation industry and of air safety information to the public.

Copies of this report, prepared by Ruland M. Woodham, Associate Director, are available for a charge through the Cornell-Guggenheim Aviation Safety Center, 468 Fourth Ave., New York, N. Y.

READY for any type of fire

New custom-built fire fighting equipment went into ready standby recently at two of the atomic energy plants operated by Union Carbide Corporation for the Atomic Energy Commission. Designed especially to work inside major process buildings, the units satisfy the rigid specifications set down by company operating and fire protection personnel.

Each unit has a turning radius of 16 ft. and is able to negotiate turns into 4-ft. aisles, with overhead clearance of 80 in. Top speed of the unit, when fully loaded, is from 25 to 28 mph. It can pump and spray water at a fire while in motion or it can go into operation within seconds upon arrival at the scene of an emergency.

The unit is powered by a 118-hp. gasoline engine which is used to propel the unit and to furnish power to a 500 g.p.m. Class A fire pump. The pump is a single-stage centrifugal pump capable of delivering pressures up to 350 p.s.i.g. Also attached are two reels of 200-ft. length of 1-in. high-pressure booster hose fed by a 200-gal. water storage tank.

Suitable equipment is provided for supplying premixed quantities of water with a wetting agent into the pump suction from a 20-gal. wetting agent tank which will in turn produce an effective foam for combating flammable liquid and ordinary combustible fires. A 300-lb. dry-powder fire extinguishing unit is also provided for combating flammable liquid and electrical fires.

A demountable multiversal deluge gun can pour out large volumes of water in various spray patterns. The gun can be rotated 360 degrees on a vertical axis and adjusted from horizontal to vertical. It is designed not to "whip" like an ordinary nozzle and can therefore function unattended.

The units are stationed at strategic points in the major process buildings and will be operated by the local emergency squad composed of operations personnel. Operation of the unit, fire-fighting techniques, and care of the equipment were stressed in an extensive training program held recently under direction of Union Carbide fire protection engineers.

TESTING the new fire fighting equipment.

OFF THE JOB

Safety programs for plant and community

BY HARRY C. JOHNSON

NSC Staff Representative, OTJ Safety Committee

This article, originally published as "Danger . . . Men Not Working" in the November 1958 issue of *The Telephone News*, has been reprinted through the courtesy of Mr. R. G. Engle, editor of *The Telephone News*, an organ of The Bell Telephone Company of Pennsylvania and The Diamond State Telephone Company, Philadelphia.

A YOUNG LADY employed by our company was driving with her date, when the radio knob on the car panel fell off. Both attempted to pick it up off the floor. The car hit a pole. Two of the young lady's ribs were broken.

In another case, a Bell man was getting out of the bathtub, when he slipped and struck his head. Result—concussion.

There was the young lady, riding double on a bicycle, who caught her foot in the spokes and was temporarily lamed.

And the man who fell down the last three steps into the cellar of his home and struck his head on a toy truck left at the bottom of the stairs.

And the man who was coiling a garden hose, when an end of the hose knocked a lighted cigarette into his eye.

Accidents like these and many others happen to our people off the job. Spike heels, throw rugs, and traffic cause many more off-job accidents. Yet, these same telephone people—that is, all of us—have one of the finest on-the-job safety records in the world!

The startling figures are that there are 40 off-the-job accidents among people of our companies to one on-the-job accident; 14 off-job fatalities to one on the job.

It is true that we spend much more time off the job than on it. But most of us spend roughly eight hours of each 24 in sleep, and few accidents occur during sleep. Subtracting the hours of sleep, and adding 16 hours a day for our two days off, we may say that each telephone man and woman spends 72 accident-exposure hours off the job each week compared to 40 exposure hours on the job. Overtime will be offset by time off for holidays, vacations, and incidental absence, figures show.

So the 40-to-1 ratio for disabling injuries and the 14-to-1 for fatal accidents is almost incredible. What happens to us when we go home from work? Why are we so much more accident-prone?

These are vital questions—vital to all of us—to which our companies want the answers. Early this year the American Telephone and Telegraph Company developed a new method of recording and measuring off-duty injury experience. This method was accepted by our companies and became effective with the third quarter of the year.

Under this method, each off-the-job disabling injury (disabling for as much as one day) is to be reported to the supervisor of the injured person, and a form filled out giving details. These include the character of the accident, the cause, the circumstances, and the resulting injury. Accidents which occur during vacations should also be reported, if they disable the victim for as much as one day.

The reason for this program is obvious. There must be some way or ways to prevent, or at least to diminish, off-the-job accidents—because accidents may be very tragic, indeed.

An accident may cause the loss of only a day's work, certainly not

a matter of life and death, though a temporary annoyance, especially to the victim. But accidents which cause death, or permanent disability and injury, are another story. These accidents are tragic for all concerned — the person himself, his family, his friends, and his community, which loses his skill and support.

Such accidents must be prevented, if there is any way it can be done. This study may disclose how.

Bell System people are trained with scrupulous care to insure their safety, while performing their jobs. The remarkable safety record of our companies is evidence of this. A Bell man or woman at work is safety-wise to an amazing degree. Why shouldn't this safety wisdom rub off on him for the hours he is not at work?

We asked this question of William E. Helms, manager of Medical Department and Safety of our companies.

"We integrate safety into our job training," Mr. Helms said. "Bell provides the best and safest equipment and tools possible. And we teach our people how to do their jobs safely and how to be safe on the job. Of course, we have not taught anyone how to be safe at home, how to get in and out of a bathtub, for example, or how to walk safely across a throw rug on spike heels. I merely cited these as examples of home dangers, because both are the causes of many off-the-job disabling accidents.

"Perhaps, the most important thing is that off the job we do foolish things we wouldn't dream of doing at work, because we have been trained not to do them at work. I can give you a fine example of that. It happened years ago—years in which I, as a safety man, have learned to practice, at home and all the time, what I preach on the job. I was the culprit of this long-ago incident.

"I had some work to do on the windows outside my house. I climbed to the top of a stepladder and, standing on top of the ladder, I still had to stretch up to reach the windows.

"A neighbor of mine, a contractor, saw me and came running across the yard to give me a well-deserved rebuke.

" 'I'm surprised at you, Bill,' he said. 'You are in safety work at Bell, and you're doing something you wouldn't permit a Bell fellow to do for a minute.'

"My face was red, and it ought to have been. If a man in safety work himself can be so forgetful of the first rules of safety, it is indicative of certain mental quirks we human beings have. It is those quirks which cause us to have accidents, and we hope to identify and pinpoint these accidents in our off-the-job safety program.

"It may seem a bother to us at the time we have to make out reports. But that little bit of extra trouble we take may save a lot of future heartbreak for many people — possibly even for ourselves and our families."

Catastrophes Take Fewer Lives in 1958

About one-third fewer persons died in catastrophes—accidents in which five or more persons are killed — in the United States in the first six months of this year than in the similar period of 1957, statisticians of the Metropolitan Life Insurance Company said.

The six-month catastrophic death toll of about 1,200 in 1957 included the loss of at least 350

lives in Audrey, the unseasonable June hurricane. This year there were no comparable natural disasters, and the number killed dropped to slightly more than 800.

Fatalities from civil and military aviation catastrophes have been appreciably greater this year than last. Fires in dwellings and apartments took an increased number of lives; motor vehicle mishaps in which five or more persons were killed almost equalled 1957; but tornadoes and floods showed declines.

Heaviest toll in a single disaster was the 49 lives lost in the collision of a scheduled airliner and a jet near Las Vegas, Nev., on April 21. Two military planes collided over Los Angeles on February 1, killing 48; and a scheduled plane crashed near Midland, Mich., on April 6, taking 47 lives.

The only natural disaster of the year was a group of tornadoes which hit northwestern Wisconsin on June 4, claiming 30 victims. The two remaining major catastrophes took place in late February: one involved poisonous liquor in New York City, causing 27 deaths; the other mishap occurred when a school bus plunged into a river near Prestonburg, Ky., drowning 27, all but one of them children.

Habituating Drugs

—From page 82

ada, practically all tranquilizers are available without prescription, in contrast to the situation in the United States. This may account for the fact that to date their sale in Canada indicates an additional use of nervous system depressants.

The alarming feature about the new depressants is the rate at which they are gobbled up by the public. Apparently alcohol and the older depressants cannot fulfill the demands of the national neurosis in our two countries. Of one thing we can be very sure—when we add together the sales of nervous system depressants from the alcoholic beverage industries and the drug houses, we realize that it is big business.

We have no general program of instruction as to the early recognition of toxic effects from depressants to guide those who undertake self-administration. We do not yet provide adequate instruction on this matter for many physicians who prescribe them.

It would be my guess that the use of tranquilizers by the working population is extensive and that not one in a thousand knows how to recognize toxic effects, realizes the significance of an increasing tolerance, or understands the problems within himself or his environment that make him feel the need for a depressant.

Narcotics. Opiates and other narcotics do not constitute a serious problem in industrial health. Narcotic addicts are not regularly employed. One reason is that the cost of narcotic addiction could not be maintained long by the proceeds of legitimate employment. This does not mean that narcotics addiction is not a serious problem for the country as a whole, but within the industrial setting alcohol should receive first place

as a hazard to industrial health. Among the rest of the habituating drugs, sedatives and tranquilizers are second in importance.

Nervous System Stimulants. The most important group of drugs in this class are the amphetamine compounds, such as benzedrine, dexedrine, and methedrine. Within recent months two patients had come to my attention who maintained a daily intake of about 200 mg. Some addicts take much more. One of the patients was a business executive who had begun using these stimulants about four years ago to keep going when fatigued. Eventually he had to have them because without them he experienced such lack of drive, inability to concentrate, and depression that he was unable to carry on his work. The other patient was a physician who had shifted from narcotics to amphetamine addiction.

How many more executives are maintaining an intake of nervous system stimulants in toxic quantities to meet the demands of their jobs? How many attempt to balance the effect of these stimulants with those of a depressant and vice versa? There is considerable evidence that amphetamines may also be used to excess by some transport drivers.

What is the real meaning of such extensive use of these chemicals? Why is there such a widespread tendency to change the way in which we feel in such a potentially dangerous fashion? Why do so many fail to find within themselves the resources to adjust to their life situation in a constructive, yet comfortable manner?

Have we somehow developed social situations that no one could be expected to adjust to satisfactorily? Does most of the fault lie in the undeveloped resources of those who depend on chemicals, or have these people been deficient in resources since conception?

The last possibility I discount as not of any great significance. Most people who have become addicted to alcohol, for example, impress me as having excellent latent resources which somehow have been ineffectively harnessed. I am also of the opinion that no one, however strong or stable, could adjust satisfactorily to some industrial situations, particularly at the managerial and executive level.

Many physicians fail to take into account seriously enough the possibility of addiction when prescribing drugs. Special precaution should be taken routinely in prescribing any nervous system depressant to anyone who already has or has had an addiction to that or any such depressant.

It would be extremely helpful if every health examination of an adult would include at least an attempt to assess the relationship between the patient or employee and the drugs which directly affect the nervous system. Little of value could be expected at the pre-placement examination, but more might come to light in the periodic examination or when employees are referred for a multitude of reasons that elude ready diagnosis. This alone would be of inestimable value to the new subcommittees within the industrial medical association which have been set up to begin an investigation of this problem.

Prevention of alcoholism will come about only when we have re-examined the roots of our modern way of life—its values, its purposes, its weaknesses, and its strengths. The correct answers to the alcoholism problem alone will automatically shed new light on every psychological and social problem with which we are faced.

Finally, I quote a statement by Dr. J. K. W. Ferguson, chairman of the Medical Advisory Board of Alcoholism Research Foundation in Ontario: "Our basic problem is not habit-forming drugs, but habit-forming people."

Attempts to place the whole responsibility on the alcohol beverage industries and the drug manufacturers are only indicative of ignorance of the over-all problem and of our futile attempts to cope with it thus far. When basic research into addiction is in keeping with the size of the problem, then we will be in a position for positive action. Then, and then only, can we count on educational programs and clinical procedures to institute prevention.

Safety Library

—*From page 80*

gram conducted by the American Foundrymen's Society.

Discussion of compensation aspects of loss of hearing briefly covers historical developments, legislative decisions, causative factors and certain solutions to the industrial noise problem. Some of these solutions are proposed, and some are in effect.

Physics, physiological aspects and medical supervision are treated in a general way but yet are specific enough to be practical. The chapter on noise measurement is well written and will serve as a good introduction to equipment and techniques used to evaluate noise sources and exposures.

Typical sources of noise observed in foundries—shakeout, chipper, ram, tumbler—are mentioned, with over-all noise levels and octave band levels measured at two to five feet from a machine and in the vicinity of the operator. About one-quarter of the manual is devoted to the engineering control of noise, with specific examples and controls described.

Since noise exposures may be too high, even after noise control measures have been adopted or where complete control is not possible, ear protection is necessary. A discussion of this phase of the foundry noise control problem is presented, including pertinent facts on the initiation of an ear protection program.

—Ed Alpaugh

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"Disaster Planning Within a Chemical Industry." William C. Quinn. *American Association of Industrial Nurses Journal.* October, 1958. p. 16.

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Prevention." T. R. Leadbeater. *Supervision.* Oct., 1958. pp. 10-11.

"Pencil Plant Is Prepared If Somebody Yells—Fire." *Wood and Wood Products.* Nov., 1958. p. 23.

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Floors

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Lighting

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Lumber Industry

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Material Handling

"Back-Saving Automatic Unloader." *Agricultural Research.* October, 1958. pp. 8-9.

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Noise

"Noise—Is It a Health Problem?" Arain Glorig and Anne Summerfield. *Journal of the American Medical Association.* September 27, 1958. pp. 370-376.

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"Cataracts and Ultra-High-Frequency Radiation." David G. Cogan and others. *AMA Archives of Industrial Health*. October, 1958. pp. 299-302.

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Railroads

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"Spent Sulfite Liquor Developments." *Industrial and Engineering Chemistry*. October, 1958. pp. 95A—96A.

Woodworking Industry

"Safety Check List." Jack Bedford. *Hitchcock's Wood Working*. October, 1958. pp. 47-49.

ADDRESSES OF MAGAZINES MENTIONED

Readers are asked to send their requests for copies of magazine articles to the publishers, rather than to the NSC Library, which is unable to fill such orders.

AMA Archives of Industrial Health, 535 N. Dearborn St., Chicago 10.

ASTM Bulletin, 1916 Race St., Philadelphia 3.

Agricultural Research, U. S. Department of Agriculture, Washington 25, D. C.

The Edison Electric Institute Bulletin, 750 Third Ave., New York 17.

Engineering News-Record, 330 W. 42nd St., New York 36.

Hitchcock's Wood Working, 222 E. Willow Ave., Wheaton, Ill.

Hospital Management, 1319 F St., N. W., Washington 4, D. C.

Hospitals, 18 E. Division St., Chicago 10.

Industrial and Engineering Chemistry, 1155 Sixteenth St., N. W., Washington 6, D. C.

Industrial Medicine and Surgery, P. O. Box 44306, Miami 44.

Industrial Nurses Journal, 170 E. 61st St., New York 21.

Journal of the American Medical Association, 535 N. Dearborn St., Chicago 10.

Loss Control, 142 Berkeley St., Boston 16.

Machine and Tool Blue Book, 222 E. Willow Ave., Wheaton, Ill.

Modern Railroads, 201 N. Wells St., Chicago 6.

Noise Control, 1278 Massachusetts Ave., Cambridge 38, Mass.

Nursing Outlook, 2 Park Ave., New York.

Pacific Factory, 709 Mission St., San Francisco.

Pit and Quarry, 431 S. Dearborn St., Chicago 5.

The Plant, Plant Publishing Co., St. Joseph, Mich.

Public Health Reports, Public Health Service, Washington 25, D. C.

Pulp and Paper Magazine of Canada, National Business Publications, Ltd., Gardenvale, Que., Canada.

Refrigeration Service and Contracting, 433 N. Waller Ave., Chicago 44.

Sentinel, 85 Woodlawn St., Hartford 2, Conn.

Supervision, One Waverly Place, Madison, N. J.

Wood and Wood Products, 59 E. Monroe St., Chicago 3.

Compensation Myths

—From page 70

ical opinions of diagnosis and prognosis, opinions that create a field day at hearings.

There is no pre-placement physical examination that can indicate within 10 per cent accuracy a potential back difficulty, one of our most common causes of compensation cases. Silicosis might lie dormant for years before becoming acute. It is almost impossible to detect epilepsy in an applicant unless the person volunteers the information, or a previous employment check reveals the fact. These are common disabilities continually brought up as typical workmen's compensation problems. How can a second-injury clause possibly protect an employer in these areas?

Psychologically, every improvement in the act is good in convincing employers. But I don't feel it's necessary, and there seems to be much experience to prove this attitude.

Collectively, employers have thousands of diabetics, cardiacs, epileptics, arrested TB's, and the like on our payrolls doing an excellent job—and safely.

I have heard the personnel director of Libby-Owens Glass Company, our safety director, and others state in speeches that, if companies would devote more time, money, and effort to their safety programs, they wouldn't worry so much about insurance and compensation costs. This philosophy is the secret.

I don't mean just the posting of placards and installation of guards on machines. This intelligent safety program has to be one of constant vigilance . . . of permeating the consciousness of every employee on the meaning of safety . . . of contests . . . and pride of work . . . immaculate housekeeping—so many such facets necessary to the maintenance of a good program.

These items cost a little more, but reduced insurance rates more than make up for the expense—not to mention the sparing of many individuals from crippling accidents.

To have a successful and satisfying experience with the hiring of the handicapped, an over-all good safety program comes first. Perhaps equally important is the selective placement of the applicant with a disability. This means having a good pre-placement medical examination—not for rejection but to insure good placement and safety.

If these two requirements are met, workmen's compensation need not enter the picture. This conviction is backed up by ample proof.

It may be coincidental, but it has been my observation that those who scream the loudest about problems in hiring the handicapped have little firsthand knowledge of the subject—because they've never *hired* any handicapped.

WHAT'S NEW
IN
NATIONAL SAFETY COUNCIL SERVICES*

Aircraft Fuel Servicing Safetygraph

FUELING visual aid shown in use.

A new safetygraph is now available, illustrating safe procedures and practices to be followed during aircraft fueling operations. This device, published by the National Safety Council, can be of assistance in training personnel involved with fuel servicing operations on reciprocating and turbine engine aircraft.

The multi-colored, 12-page safetygraph emphasizes various fueling hazards to guard against, such as defective equipment, spills, fire prevention, and falls. This visual aid not only makes it easier and quicker for the instructor to discuss an important subject, but also helps the audience to understand and remember the device's contents.

Safetygraph No. 31 has been assigned the stock number 174.81, and can be ordered in quantities and prices. 1 to 9, each: $10; 10, $9.50; 100, $9.25. Safetygraph Easels, only 1 to 9, each: $4.50; 10, $4. These prices are subject to 10 per cent discount for NSC members.

*Look to this page each month for latest news about NSC services. Address request for additional information, samples, or prices to the Membership Service Division.

Family Safety

Safe at Home, a new off-the-job booklet, emphasizes basic home safety practices but also includes some recreational and traffic material. Its newness is in its approach as well as its publication date.

The introduction, directed to parents, is motivational in nature. It aims to create a realization of the need for and a desire to make the home as safe a place as a child believes it to be. It is designed to develop an awareness of the responsibility of adults for not only their own safety but also for that of dependent children and the elderly.

This pamphlet provides listings of specific "Danger Signals" (hazards) and "Safety Habits" (safe practices) related to the prevention of home falls, fire burns and scalds, cuts, electric shock, and poisoning (gas and solid). The recreational and traffic material is more general.

The minimum order for this two-color, 16-page, illustrated pamphlet is 50 copies. It may be purchased from the National Safety Council at the prices listed below.

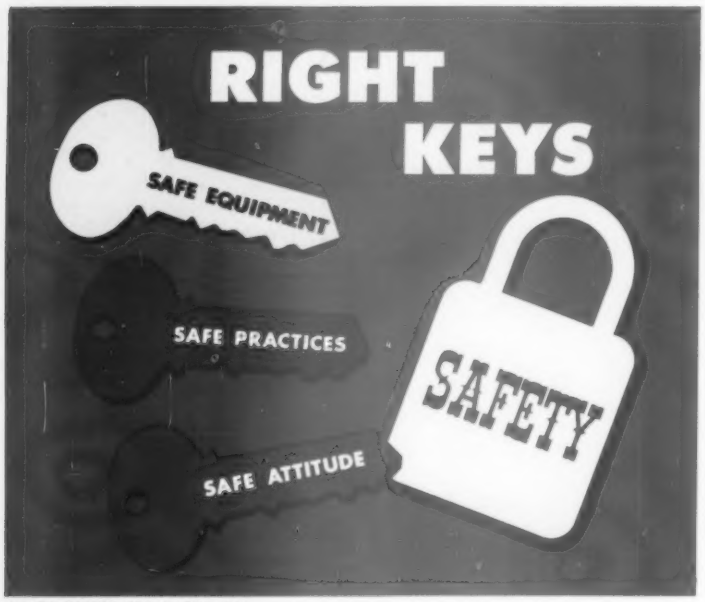
Number of copies	Price per copy
50-499	$.065
500-999	.060
1,000-4,999	.056
5,000-9,999	.053
10,000-19,999	.051
20,000 & over	.049

Stock number—599.61

COVER and pages 4 and 5 of the new home safety booklet.

For a More Successful Poster Program

POSTERS illustrated on the following pages are new, and actually are printed in two or more colors. NOTE: (1) The new 1959 poster directory is now published — with a wide variety of subjects. Stock of those directory-listed posters will be available at least until October 1, 1959. (2) Most posters appearing in NATIONAL SAFETY NEWS in 1959 will be stocked throughout 1959.



JUMBO POSTER FOR MARCH, 1959

The Jumbo poster, issued monthly, is designed for outdoor use and is available to members on annual subscription but is not stocked. Its actual size is 9' 11" by 11' 8".

SAFETY BANNER FOR MARCH, 1959

Here is the attention-getting, monthly cloth banner. Available in two types—indoor and outdoor—both are identical in size (10 feet long by 40 inches high), have the same general message and multi-color design. Indoor type is of sturdy drill with grommets for easy hanging, while the outdoor banner is of extra heavy drill with wind vents, and has strong stitched-in rope for durability.

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1519-A 8½x11½

This new four color poster is illustrative of the 72 four color posters shown in the 1959 Poster Directory.

Electrotypes of poster miniatures on this page are not available, nor can payroll inserts be supplied.

Posters below are printed in two or more colors

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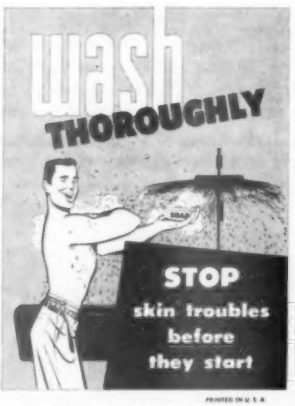

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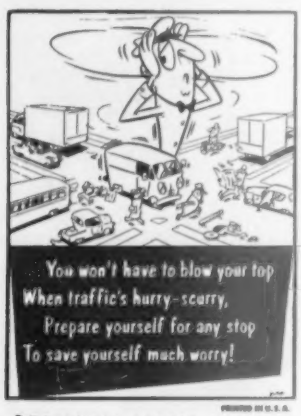

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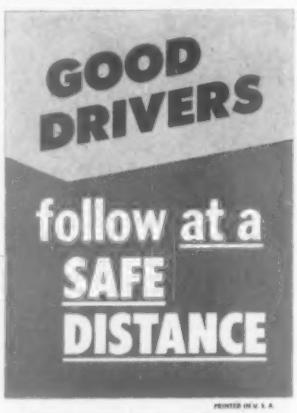

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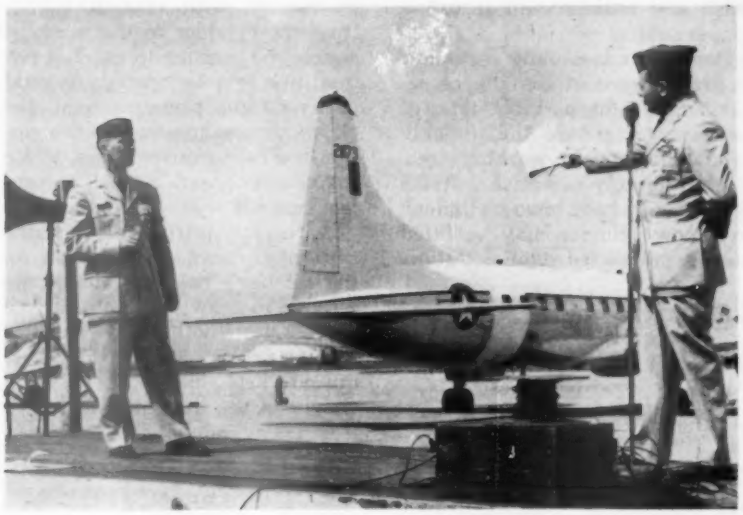
High Visibility for Planes



In the next few months 13,000 U. S. Air Force aircraft will receive a coat of fluorescent blaze-orange "be seen" paint, as the result of an 18-month USAF project to reduce mid-air collisions.

In the third of a four-city air and ground demonstration of the new paint, 12 planes went on display before aviation industry and news media representatives at Chicago's O'Hare International Airport. Washington, D. C.; New York; and St. Louis were also on the tour schedule.

Each type of aircraft had, with minor variations, its own paint scheme, designed for maximum flight visibility between planes and for the benefit of ground control personnel.

Estimated to last from 9 to 16 months depending on geographic location, the paint has been selected from experiments that involved 1600 aircraft. This particular paint is effective under visual flight conditions subject to haze, dust, or other restrictions to flight visibility. In fact, one pilot spotted the orange color from his aircraft at 41,000 feet altitude.

During 1956 and 1957 the USAF experienced 25 mid-air collisions, 56 per cent of which occurred during daylight hours, when visible flight instructions were in effect. Developed by the Flight Safety Division, Headquarters, Air Training Command, Randolph AFB, Tex., the blaze-orange fluorescent paint is considered one answer to this situation.

Life-Giving Oxygen

—From page 33

preparation of the patient for resuscitation will help secure an open path to the lungs.

According to medical authorities, unless the condition of the patient prohibits, he should be placed on his back with a pillow or folded blanket under the shoulders. This position extends the head in a downward position which helps clear the air passageways.

It places the stomach in a lower position than the patient's throat and prevents its contents from obstructing the flow of oxygen. It allows the entire body to be covered with a blanket during resuscitation; body warmth is vital for the successful treatment of asphyxia. The supine position also enables the patient's chest to rise and fall freely at maximum depth during resuscitation.

To prevent the tongue from blocking the throat, the tongue should be drawn forward and a wire airway gently inserted behind it. If excessive mucus or vomitus is present in the throat or mouth, an aspirator — which

should come as an accessory with the resuscitator—should be used at once to suck out the obstructing matter. False teeth or any foreign object, such as gum or tobacco, should be removed.

The effectiveness of an automatic resuscitator depends on an airtight circuit with the lungs of the patient. The resuscitator becomes inoperative if leakage occurs around the mask, so an airtight fit is necessary over the mouth and nose. When the patient has extreme facial contours or facial injuries, which prohibit the mask from being sealed on the face, a dampened cloth or towel placed around the edges of the mask and cushion will insure a proper seal.

Because it is usually necessary to give oxygen at the site of accidents, a light portable type of resuscitator should be quickly available to every working area. It is absolutely essential that the resuscitator have two cylinders, so a new cylinder may be fitted during protracted administration. This factor will help insure an adequate oxygen supply during resuscitation.

Equipment should be designed to operate with enough tubing from the cylinder to the mask to enable the rescuer to reach a patient in a remote location. A dual outlet on the pressure regulator allows the rescuer to help the victim in a contaminated area, while the rescuer wears a mask to protect himself.

A recently-introduced portable resuscitator can be strapped on the rescuer's back. It allows the rescuer to crawl through narrow spaces, with both hands free for moving debris and performing required first-aid services. Total weight of the unit, including two full "D" cylinders, is 31 lbs.

How the Resuscitator Works. The positive-negative pressure resuscitator is powered by cylinders of compressed oxygen used with the unit. Spring and valve settings, adjusted at the factory, regulate the operating pressure range of the resuscitator. The unit includes a preset pressure regulator.

First Aid Training

Manual artificial respiration methods and the resuscitator, its operation and maintenance, should be familiar to those directly responsible for safety of personnel. That should include every doctor, nurse, and rescue worker in the plant. Because time is such a vital factor during critical asphyxia, personnel engaged in plant protection work and electricians and foremen should receive training in its use.

Intensive training with manual resuscitation will allow treatment to begin while a mechanical unit is being brought. Manual methods may include the prone back-pressure and arm-lift technique. Recent studies, however, indicate that mouth-to-mouth breathing may be more effective.

An adequate training program involving the resuscitator should begin with an introductory formal lecture by the safety director or service representative of the manufacturer. Inexpensive training aids, which simulate actual conditions, should be supplied with each unit; supplementary devices are available.

Personnel should see the resuscitator in operation and should practice with it. A recommended follow-up procedure would be a monthly refresher talk by the safety director or doctor, after which the resuscitator can be demonstrated and used. This training program involves little time, and can pay off in lives in an emergency. Training should make rescue procedure completely automatic and should eliminate the need to consult literature or instructions in time of emergency.

Care and Maintenance of Resuscitator. Effectiveness of a resuscitator depends on the two basic components: the resuscitator, including its mechanism, hose, and mask; and the oxygen cylinder and its contents. The mechanical section of the resuscitator should be repaired and adjusted only by the manufacturer. Since any mechanical component can go out of order, it is vital that all resuscitators in the plant be given periodic checks.

In the care of resuscitators never use oil in or on any part of the equipment, because oil in contact with oxygen constitutes a fire hazard.

A resuscitator requires reasonable care in handling. Damage to the working mechanism can result from a fall on a hard surface. When the resuscitator is not in operation, the oxygen cylinder valve should be closed and the oxygen bled off. If there are any leaks in connections, the oxygen will not be lost.

After each use, the face cushion, plastic mask, tubing, and bottles should be washed thoroughly in a 20 per cent aqueous solution of green soap. Next, rinse these parts with clear water. The parts should then receive a second cleaning with an aqueous solution of 50 per cent alcohol and should be allowed to dry.

The same solution can be flushed through the mask opening in the resuscitator mechanism until the lower chamber is clean. A clean water rinse and alcohol should be used for the resuscitator mechanism. Proper cleaning will prevent cross-infection and will help insure trouble-free operation.

Oxygen and Gas Cylinders. Oxygen may be delivered to the resuscitator from a cylinder or from a piped system, a type of oxygen supply becoming more common in industrial plants. Oxygen cylinders should be checked frequently to verify the amount of oxygen on hand. There should be at least two "D" cylinders in reserve.

The plant physician should assign the responsibility for regularly checking oxygen supply to one member of the staff. A high-pressure flexible metal hose with proper fittings allows a portable resuscitator to be used with a large oxygen cylinder. With such an adapter, a cylinder of industrial oxygen can be used if the small cylinder supply has been depleted.

No gases other than oxygen or oxygen-carbon-dioxide mixtures, as recommended by the doctor, should be used to operate the resuscitator. An empty cylinder can be replaced with a full cylinder

on the portable model, while the resuscitator is in operation. The two cylinder yokes are equipped with check valves that prevent oxygen from escaping, when one cylinder has been removed.

Standard oxygen cylinders which may be used are: "D" 12.7 cu. ft., "E" 22.05 cu. ft., and "H" 244 cu. ft. The "D" cylinder will operate a resuscitator, such as the Handy, for approximately 10 minutes, "E" approximately 20 minutes, and "H" from 2½ to 3 hours.

When the Snow Fell

—From page 21

According to a pre-arranged plan, the objective is to renew service in any particular area to as many customers as possible as promptly as possible. This is accomplished by concentrating efforts on damaged facilities which affect larger groups of customers, and then to the restoration of isolated cases of interruption. This general plan, followed by PP&L in all emergencies, was put into effect in the emergency created by the March blizzard.

The Lehigh division, which encompasses the Allentown-Bethlehem area, was able to restore service using local crews of the company. However, a total of 78 extra crews, totalling 588 men, were sent to the Lancaster division to support efforts of the 39 crews regularly stationed there. These came from all parts of the firm's service area. In fact, six crews, or 47 men, were brought to Lancaster from outside the company's service territory.

The authority for declaring a major company emergency rests with the CEO. The group goes into action when prompt renewal of service in some part of the service area cannot be accomplished by local operating forces or locally-assigned construction forces.

CEO functions as the coordinating agency. Its job is to accurately determine the needs of each area; apportion manpower commensurate with such needs; redispatch manpower from area to area, as changing conditions dictate; as restoration of service nears com-

pletion, determine the order in which manpower may be released to return to normal working locations; and to procure and disperse trucks, equipment, and necessary supplies. CEO draws on construction, engineering, stores, purchasing, or any other department for manpower resources and skills available.

When an emergency is of such severity as to require assistance over and above that available on the firm's service territory, CEO contacts other utility companies, depending on the type and extent of the storm. These utilities work cooperatively toward assisting each other during severe crises.

An emergency assistance roster, kept up to date at each company, lists persons to be contacted, if their services are desired in critical situations. Through such a roster, PP&L has in past major emergencies secured aid from organizations in Massachusetts, Ohio, Pennsylvania, Maryland, and North Carolina. PP&L has also sent men to firms as far away as Florida to help during emergencies in that and other states.

Assistance has also been obtained from local and nearby line-construction and right-of-way clearing contractors . . . these outside contractors also being listed and called, as necessary. Other rosters include the names of firms providing helicopter and other unusual services that may be useful to the storm-fighting effort.

CEO maintains a list of all company trucks and other heavy-duty vehicles—by location, size, type, and whether equipped with FM radio. The organization also has a list of contractors that rent heavy equipment. CEO keeps an additional record of trucks, bulldozers, cranes, pumps, and other equipment these contractors normally have on hand.

Building the kind of system that best resists crises caused by nature is a day-to-day job. Development of facilities is based on the principle that the physical system must be designed and built to make electric service as nearly continuous as is humanly and reasonably possible. Thus, the company takes advantage of technological improvements in materials, devices, and methods.

The safety record during major emergencies, where the public and the firm's employees are concerned, has been gratifying to this utility. Sound, continuous training in safe work methods and practices is considered responsible for the company's safety achievements.

The public has been conditioned to protect itself during emergencies through programs presented by newspapers, radio and TV, and via special safety talks to Boy Scout troops, school groups, and civic organizations.

During any storm, company information groups tell the public of the extent of storm damage, steps taken to counter it, actual progress made, and what the public can do to help speed restoration. Safety measures, which the public can use, are also a part of this information process.

How Much Radiation

—From page 35

gonadal tissue, can withstand far higher exposures than can the whole body. Whereas 400 to 600 r whole body radiation would prove fatal to at least half of those exposed within a month after exposure, dosages of 4,000 to 6,000 applied locally are sometimes required to combat certain types of cancer.

To understand this mechanism, think how much more severe is a 60-70 per cent body burn than one of a limited extent. The chances for survival in the former are much less.

The gonads are by all odds the most critical body area. Therefore, the 10-roentgen-30-year limitation has been proposed in the interests of preventing the build-up of a large pool of exposures that would interact, through marriage, to increase the mutation rate beyond its present day level.

Now, what about the life-shortening effects of radiation?

It was reported at a recent meeting of the Radiation Research Society at Burlington, Vt., that an exposure of 1 roentgen would shorten one's life by about 12 days.

Let us study this matter to make certain that we get the full

perspective of this particular effect, and understand that this observation should have little bearing on the use of medical x-rays.

1. We should not be so concerned over life-shortening, in days, as to lose sight of the *life-lengthening* effects of x-ray, in years.

Think of the children whose lives have been lengthened by many *years* because x-ray helped to find and retrieve foreign objects in their stomachs or lungs. Think of the young adults whose tuberculosis was found early, and whose lives were lengthened by *years*, as a result. Think of the elderly, whose lives were lengthened by the discovery of cancer through x-ray studies.

2. Let's remember too that the life shortening exposures being reported are of the "whole-body" type, as experienced during fallout or nuclear incident, not the limited body-area exposures used in medical x-ray.

3. There is even much disagreement among experts as to the extent of the life-shortening effect. Where Dr. Howard Curtis, reporting at the Burlington meeting, gave 12 days per roentgen, Dr. G. Failla, reporting at a radiological meeting last year, gave 1 day per roentgen. In both studies, the work was done on mice, not

TABLE II

Computation of 30-year gonadal dose from routine annual chest and routine semi-annual bite-wing dental x-rays:

Chest Exposure

Paul Hodges, M.D., (*J.A.M.A.*, Feb. 8, 1958). *Highest* reported gonadal dosage was to female (.432 roentgens for 360 14x17" chest x-rays) which, when divided out (annually) becomes ..... .0012

Dental Exposure

Albert C. Richards, M.D., Associate Prof. Dentistry, University Michigan School of Dentistry, in *J.A.D.A.*, March 1958, page 364, reports *highest* gonadal dosage during dental semi-annual *bite-wing pair*, to be about (per year) .0004

.0016

(Now: Multiply these figures by 30) 30

.048

For convenience, call it 0.05 or 5 *hundredths* of a roentgen, and contrast it with the 10 full roentgens set up as standard by the National Academy of Sciences.

men, and many assumptions were made. It is agreed among most radiation scientists that there is tremendous room in this field of study for errors in calculations.

X-ray, like everything else, is a potential hazard. A knife in the hand of a surgeon is curative; in the hands of a criminal it is death-dealing. Fire can burn our homes —or heat them. Water can quench our thirst—or drown us. We depend on the experts among us to keep these valuable weapons under control and we trust that they know how to use them wisely. If scientifically controlled, the value of x-ray, and other forms of radiation, in medical care is incalculable.

Many doctors order only when necessary (never routinely) the type of x-ray study that might expose gonadal tissues in the direct beam of the x-ray; for example, pelvic x-rays of pregnant mothers and the sacroiliac or hip joints of young men. Some radiologists are now lead screening male gonads when taking such x-rays. Then, too, proper filtering and careful focusing will cut down gonadal exposure. Also the use of high speed films and the highest possible voltage applicable will lower the required exposure. In brief, modern techniques combined with judicious x-ray studies can limit gonadal exposures during the child bearing years and that is the most important thing to remember about diagnostic x-ray studies.

Accompanying this article are tables showing comparative dosages, so that one can see just where the diagnostic use of x-ray fits in. (We exempt therapeutic applications of x-ray entirely, since here the question of life-or-death far supersedes the question of even gonadal exposure.)

Also attached will be found a list of measures which can be taken to minimize exposure to the patient. Following these will permit the industrial physician and safety supervisor to rest assured that they are gaining the maximum benefits from the use of x-ray in their plants or offices, while holding to an absolute minimum hazards connected with its use.

Writing in this vein, Robert S. Stone, M.D., prominent San Fran-

cisco radiologist, stated at a meeting of the American Roentgen Ray Society last year:

"While education in the hazards and the protective measures has been given to radiologists to some extent, little or none has been given to the vast numbers of others using x-ray equipment. There are estimated to be 125,000 x-ray machines in the United States. One-half of these belong to dentists, the other half to medical doctors, osteopaths, chiropodists, and chiropractors.

"In the state of California, the California Academy of General Practice, with 2,400 members, estimates that more than 50 per cent of them do their own diagnostic x-ray work. There is, therefore, a widespread and varied audience to be educated regarding the hazards to themselves and their patients, and the protective measures to be used. Radiologists should take a leading role in this program of education."

Electronics

—*From page 25*

mitting experts to remove mines before other soldiers passed through the area.

Detection of fire is an important function that can be handled well electronically. It is important to know either that fire is present where it is required, or that it is not present where its presence would be detrimental.

In the first case, if the fire in a liquid or gas-fired boiler is extinguished without shutting off the fuel supply, a subsequent ignition could and frequently has completely destroyed the boiler and wrecked the containing building.

To avoid this situation, a phototube is focused into the fire box to detect the presence of the pilot flame and the main flame when the boiler is on, and to shut the unit down as soon as both flames disappear, or to prevent it from feeding fuel if the main flame does not appear within a specified time after the fuel is introduced. The circuits are arranged to shut off the boiler, if the circuit fails.

A fire in any place where it is not wanted can be detected with a flame detector tube and caused to sound an alarm or turn on automatic extinguishing equipment.

Often the presence of smoke can be used as an earlier warning of fire by passing light beams throughout the area and detecting the decrease in light received at a phototube, when smoke is in the room.

In some instances valuable material may be destroyed by fire without flame appearing. Such is the case of a fire in a fur vault containing mink: the mink burns without flame.

Detection for control. All manner of systems for control of processes or equipment can be performed rapidly and accurately with electronic sensing and controlling devices.

The level of the liquid in vessels is measured without contacting the liquid by measuring its absorption of radioactivity or the distance of its surface from the

top of the vessel with supersonic waves.

Changeover of the liquid flowing through oil pipelines from one type to another must be controlled carefully to prevent introducing more volatile liquids into stills or systems set for less dangerous material.

Previously, the changeover was accomplished by running great quantities of the liquid (before and after the change) into tanks at the receiving end and relying entirely on calculations of rate flow, etc., to determine when to start the run-off.

Now, by introducing a radioactive material into the liquid at the input end, the indication of the radioactive slug can be detected electronically at the receiver, and the changeover made safely and accurately.

Temperature of ovens, furnaces, molten metals, and any other heated object can be accurately controlled by sighting the hot object with a phototube circuit and electronically balancing its temperature against the temperature of a set standard. Temperature controls thus available can be made with remarkable accuracy and can prevent overheating.

Guidance

Radar covers a wide range in the field of electronic safety devices, from simple units that indicate the speed of an approaching automobile to units that control the operation of an aircraft. The radar speed detector used by police in some states is well known for its accuracy and for its effect in cutting drivers' speeds to the limits allowed.

Navigational radar guides ships and planes at a great distance from fixed stations. Submarine radar . . . sound detectors . . . can hear porpoises, in addition to giving the navigation information on the area.

In ground control approach systems, an operator on the ground follows the approaching aircraft on a radar screen and directs the pilot to the runway via radioed directions.

Instrument landing systems are essentially the same as GCA, except that the pilot receives indications as to his glide path directly on in-plane instruments.

Altimeters are equipment to indicate the distance of the aircraft above the ground by using radar apparatus tied directly to an altimeter gauge.

Weather-mapping radar units in aircraft permit the pilot to choose the smoothest course around storm areas and eliminate the possibility of not detecting mountains, should the craft stray off course.

As the aircraft approaches the runway in foul weather, the pilot is guided to the runway by flashing white lights from a series of strobeacons. By flashing a high-intensity light at frequent intervals, the weather is effectively penetrated, but the light is of so short a duration and so placed

that it does not blind the pilot's eyes.

Control

Electronic safety devices in the control grouping not only protect against injury but improve the efficiency of the operation. The familiar photoelectric door opener has a counterpart that prevents a press or shear from operating, if the operator's hands are in the danger zone.

Press control is set up with a light source at one side of the die opening and a light-sensitive device on the other side. Whenever the operator's hands break the light beam, the press cannot start. On clutch or hydraulic types, whenever the light beam is broken, the press stops at once. Failure of the light, photo device or circuit will prevent press operation.

Even radioactivity is used to protect the operator of the power presses. The operator in this instance is required to wear radioactive wrist bands or radioactive rings. When his hands are in the die area, the machine is off. It can operate only when no radioactivity is detected at the detectors.

This is not a fail-safe device, so a time delay circuit is incorporated in the circuit to provide the fail-safe feature. The detector must receive a radioactive signal for a portion of a set period (usually each press cycle) or the time delay will stop the press. The operator must put his hands in the die area—a normal procedure in unloading and loading — each stroke or the next stroke cannot start.

Automatic elevator controls which count the number of passengers waiting, dispatch cars as required, open and shut doors, and level the cars at each floor are electronic devices that increase the safety and comfort of passengers and make for more efficient operation than can be realized with manual control.

Radioactivity cannot be sensed by any human senses. Its presence can be determined only by a few special devices, photographic films, and electronic units.

The Atomic Energy Commission has made an excellent record, as thousands of persons have worked with radioactive materials, with few injuries. Much credit may be given to electronic safety devices used to detect radiation and to excellent training given to all employees. Atomic piles are continuously monitored, and control rods are inserted or removed automatically to limit operational conditions to the proper levels.

High-level work is performed remotely by operators who watch the process through telescopes or closed TV circuits. The lower levels of operation require operator control, and only through careful monitoring of every step of the processes can work be carried on without endangering the operator.

Some new item appears almost daily that will be common in the future. The military SAGE (Semi-Automatic Ground Environment) control system is designed to automatically guide interceptor planes to attacking planes regardless of evasive tactics.

On a more constructive level, such a system could control the movement of all aircraft in a given area, such as the entire United States or the North American continent. This system could help eliminate one serious cause of mid-air collisions: two planes unknowingly being in the same place at the same time.

One motor vehicle company has published an advertisement showing automobiles moving on superhighways with no one at the wheel. The system consisted of cables in the pavement emitting a signal that controlled the vehicle's speed and direction. Additional safeguards would be provided to prevent two vehicles running together, should a mechanical failure or lack of fuel stall one of the cars. Driving on other roads would be done in the conventional manner.

Such a system would eliminate the hazard due to inattentiveness that so easily arises while driving at high speed on our modern highways. The use of the object-detecting device mentioned earlier in this article would continue on conventional highways to minimize rear-end and other collisions.

Fire Fighting

—*From page 27*

Within the span of a few years, "Dacron" has been adopted in varying degrees by all leading hose manufacturers.

Size for size, fire hose cords of "Dacron" are about three times as strong as those of cotton. Fewer and/or smaller cords can be used to achieve desired burst strength which may run as high as 400 to 600 psi. Weight savings of about 10 lbs. per 50 ft. of hose, both wet and dry, are reported.

Use of smaller filler cords, made possible by the high strength of "Dacron," provides a hose with less bulk and more flexibility; water absorption is low and damage by rot is greatly reduced. For exceptionally rugged use, hose made of 100 per cent "Dacron," in both filler and warp ends, provides complete resistance to attack by mildew, rot, frequently found in industrial plants.

Fire engines. While the first fire hose was introduced in 1672, it was quite some time before it saw general usage on fire engines. Richard Newsham, a pearl button maker of London, invented the first successful gooseneck fire engine in 1721. It was so named for a long, gooseneck-shaped play pipe on top of the gallery through which water was discharged. These engines were supplied with water by bucket brigades, the water being dumped into the engines' box and subsequently pumped through the gooseneck.

With the first successful use of copper-riveted leather hose in 1811, the gooseneck went out of service and was replaced by suction engines in 1822. Newspapers proclaimed them one of the outstanding inventions of that time. They reigned as the major fire-fighting apparatus for 30 years, when a successful steam engine was invented by Moses Latta, of Cincinnati.

In the era of suction engines, rivalry among volunteer companies became so bitter that it was rare when two or more companies would not spend just as much time fighting each other as the fire. One of the more notorious battles occurred on July 26, 1846, in New York. Five companies were involved in a brawl with axes and pipes that lasted for hours and ranged from Broadway to Canal Street and parts of the Bowery. A month later, all the companies were disbanded by order of the city council.

The life of a volunteer fireman 100 years ago could hardly be described as Utopian. Aside from brawls among themselves, it was not uncommon to be waylaid by gangs of ruffians.

The first successful steam fire engine arrived on the scene in 1852, after more than 20 years of experimentation and opposition to the "hissing monster." Latta's invention, dubbed the "Joe Ross," weighed 11 tons and required four horses in addition to the propelling power of the machine.

In its first test, the machine threw water 225 ft. from a 1½-in. nozzle. Thousands of these horse-drawn wonders blossomed across the country in the next

50 years before giving way to the gasoline propelled and operated unit in 1908.

Modernization has brought about aerial ladders extending more than 100 ft., motorized pumping engines delivering 2,000 gals. per minute, fire boats throwing 9,000 to 12,000 gals. per minute, foam, carbon dioxide, "dry chemical," and other chemical fire extinguishers, automatic fire alarm systems, and hose withstanding burst pressure up to 600 psi.

But with all the improvements in modern apparatus, the most important factor in retaining man's control over fire is still common sense. The ideal method to reduce losses from fires is to prevent them.

Russian Forestry

—From page 19

Russian delegation, which consisted mainly of deputy ministers of the timber industry. During the conference seven papers were acted on; these covered various operations in the woods and included the presentation on world-wide accident reporting which I had prepared in June, plus other papers on tractor testing, use of tractors in the mountains, and training forest workers.

The exchange of technical information was very free. For example, I brought home specifications on their major woods machines, as well as about 100 pamphlets and publications of various kinds.

One of my biggest surprises was the professional competence of the key people we met. All were foresters; most had master's degrees. The masters are paid one and one-half to two times as much as the others. Many of them were women. They are urged to spend a day a week writing for publications or acting as consultants for other ministries, for which they receive extra money. They have career plans, periodic pay increases, retirement benefits. The work week is 46 hours, which they hope to reduce to 42 hours this year.

Swamp Forests. The second week, Minister Orlov and two of his deputies joined us on a special train, which took us to the experimental logging operations between Moscow and Leningrad. The train served as our home for the next two weeks. Each of us received Russian boots, quilted jacket, and hooded raincoat. These came in handy, because it rained most of the tour—mainly through swamp forests.

That first morning in the woods, Orlov talked to the group. "According to safety rules," he said, "we don't fell in windy weather like today. We hope you won't cause us anxiety by going too close to trees being cut. You're experienced, but even the experienced get caught. Watch the cutters a few minutes; then go a safe distance away. It is our responsibility to keep you alive and send you back to your families. They wouldn't like an accident."

Preventive—Prison

In the woods I saw evidence of a good safety program. They take accidents seriously. It's too bad for those who slip up. There can be a 10- to 20-year prison sentence, if one causes injuries to others. If the victim lives, he may plead for you. If he is killed, it is hard to prove you were not at fault.

Vice Minister Sudnitsin told me about plans for a radically new machine, operated by one man, to harvest timber products as it cuts a swath through the forest similar to the swath cut by a combine in a wheat field.

They are not satisfied with the labor output per man-day—much lower than ours—and are mechanizing operations as rapidly as possible to increase output. We had a ride in one of four experimental rudderless and propellerless timber patrol boats powered entirely by water jets. The boats have proved their worth, the Russians said, and about 100 of these craft will be in use next year.

Forestry experts demonstrated Druzhba (friendship), a one-man gasoline power saw. It was developed after they studied saws

from many parts of the world, including some saws of our own. Ours, they said, were too fatiguing, because a worker had to bend over to use it, and fumes were bad. Druzhba has a handling frame built up so a worker can stand erect to operate it.

One morning Mark Townsend and I, rising early to see if our guided tour was hiding anything, went through a sawmill and box mill. Without an interpreter we couldn't talk with the workers, but their smiles showed we were welcome. Safety was definitely a part of the work pattern.

In the box mill men handled the heavy logs. Six women operated smaller saws. They wore goggles, used push sticks, and stood to one side of the saw, just as we train workers to do. Many safety signs were in this small shop. Housekeeping was excellent.

The log conveyor outside—about 600 feet long—had a stop wire overhead. It was not to be started except by the person who stopped it, a good safety rule for anybody anywhere.

Special safety examinations are conducted twice yearly. In one logging camp of 600 workers, the safety committee had 10 members, one a full-time safety engineer. Workers get a month's vacation every year.

One interesting safari I made alone to the safety division of the timber ministry. Here I was shown many educational booklets, posters, scale models, and other exhibits. All accidents are analyzed by safety experts and new rules developed, if necessary. However, the rules can't become effective until the secretary of the labor union signs them, as well as the minister of the timber industry.

Workers carry identification cards on which safety violations are recorded. After three violations, the person loses his card and is demoted. The division develops safe work clothes, too, including safety helmets which are required in the woods. There were five men and women devoting full time to safety.

Training. By law, none of the workers can use machines without training. There are 146 technical schools in forest areas. Workers are taken out of production for courses lasting three to 12 months. Last year, I was told, 175,000 of the 1,000,000 timber industry workers were so trained. All woods workers are permanent; there are *no seasonals.*

Most of the logging we saw was "full tree"—that is, the entire tree is transported by truck or narrow-gauge railroad to an electrified lower landing, where limbs are trimmed off and the stem cut into products. Whole tree logging and mechanization of woods work has cut down injury rates markedly. Axes, for example, are used only to whack off tree tips too small for the electric trim saws. Axes are one of *our* major causes of injuries.

They were testing everything, it seemed—equipment, work techniques—all in an effort to find the best ways of doing a job. A most interesting piece of equipment was a piggyback tractor, a gigantic machine used in whole-tree log-

ging. Its base is a TD-60 tractor. One man saws the tree near the ground while a cable pulls the tree over on top of the heavily reinforced cab. With about a dozen whole trees, it moves across the woods. They are working on a special cutting device to be operated from the machine.

I saw their TD-40 and TD-60 logging "cats" in swampland full-tree operations. These cats are similar to the Forest Service's Tom Cat developed in Region 6 a few years ago. I mentioned this on a Radio Moscow broadcast made by the American delegation and later to a reporter for Pravda. I hope listeners, if any, got the point that initial development was by the U. S.

In swamps where tractors can't work, logging is done with electrically powered cables and six-ton winches. They also have a two-arm skidding arch tractor weighing 50 tons, electric woods saws, cable logging, bulldozers, and tree uprooters.

Being developed are new wheel-type tractors which the Russians hope will be better than the track type. I saw a photo of a lumber buggy tractor with logs underslung between the wheels; this is still experimental. Most heavy operations are performed near towns or villages. Trees are skidded distances up to 500 meters, averaging about 150 meters.

Explosives are used in fire fighting, as well as chemicals; some of these are applied by aircraft, as we are doing. Aircraft are also used for surveys and to spray chemicals for insect and disease control.

I have a vivid impression of the competence and dedication of all the people I saw, from the ministers down to the lowest paid workers, and the determined drive by the government to get the right answers to problems through research.

I visited three large research institutes that spend millions of rubles yearly. One was devoted exclusively to log floating, another to woods mechanization, and one develops standard designs for roads, bridges, houses, villages. Many men and women working for advanced degrees are studying special practical problems at the institutes.

The Russians seemed very proud of this, and, in fact, proud of the accomplishment of all their workers. They lost no opportunity to introduce individuals responsible for good work, and to give them a public pat on the back. An example was Voronitzin, director of the mechanization institute. He developed the Druzhba saw and for it received his country's highest award, the Lenin Medal.

The Leningrad Forest Institute where I visited had an enrollment of 5,000, many of these students women. This was only one of 11 forestry schools. I found in the forestry curricula required courses in Marxism, Leninism, and Political Economics. There were also physical culture and sports and a short course in accident prevention, which would be an exception in a U. S. forestry school.

Consultation Corner

—From page 58

leading from the hoods to one main duct at a distance of about 15 ft. from the two hoods.

We are going to install a water spray in the perchloric acid hood. We have checked several sources as to whether such an installation is safe, and have not received a satisfactory answer. Can you give us any information, as to whether such an installation would be safe?

Answer: Explosive anhydrous perchloric acid may be formed, where perchloric acid solutions come in contact with a dehydrating agent or where dust or organic residues come in contact with the vapor of boiling perchloric acid solutions. For this reason, where perchloric acid is used extensively, the exhaust system should be designed with short vertical ducts, which can be readily washed or taken down and with as few horizontal runs and elbows as possible.

Even with a water spray installed in the hood, there should be a separate exhaust system discharging to a safe location. Without a separate exhaust system, it would be possible to get in trouble by forgetting to turn on the water spray, when working with the perchloric acid.

There is also a possibility that the water spray or curtain is not going to catch all of the vapors. After a time there is bound to be corrosion, which would require the replacing of all of your duct work, resulting in downtime for hoods other than the perchloric hoods.

There is the danger that perchloric acid vapors may condense in the duct work and explode from impact or friction, such as could happen when the ducts are being repaired. Daily washing with water will prevent such residues, and the exhaust system should be designed with this factor in mind.

It is desirable to have the hood maintain its own air supply and not depend on air supplied by the general laboratory ventilation system. It is also recommended that the hood be completely enclosed.

New Device Muffles Blast Furnace Noise

The age-old problem of silencing the tremendous noise created by snort valves on blast furnaces in steel plants is believed to be solved by a new installation at Kaiser Steel Corporation, Fontana, Calif.

The noise control device, a *snort valve silencer*, was installed at Kaiser as a test project this year, and its effectiveness has now been established. Designed and fabricated by the Sound Control Department of Koppers Company, Inc., Baltimore, Md., the device weighs about 8,000 lbs. and is 24 ft. long by 6 ft. wide.

Encased in a 14-gauge steel shell, the sound absorber column uses the soundstream principle. The column is filled with spun metallic wool held in place by a face sheet of glass fiber, which is covered by a perforated galvanized sheet face plate. The entire assembly is suspended from the outlet flange of the snort valve and can be used at temperatures of more than 500 F.

In the case of Kaiser Steel's blast furnace operation, the *snort valve silencer* dramatically reduced the noise to acceptable levels.

Middle age: When you want to see how long your car will last instead of how fast it will go.

Wire from Washington

—From page 17

Stringent safeguards for workers in nuclear power plants were urged at the second United Nations Conference on the Peaceful Uses of Atomic Energy conducted in Switzerland.

A group of international experts, working under International Labor Office sponsorship, completed an international classification applicable to pneumoconiosis, a disease which attacks workers who breathe excessive dust in the course of their work.

The Bureau of Mines made final its proposed revision of regulations prescribing procedures

for testing and approving lighting equipment for illuminating underground workings.

Aviation Safety. The new Federal Aviation Administrator warned air safety experts against complacency in making flying safer.

The Civil Aeronautics Board announced its intention to amend the Civil Air Regulations to require the use of high-visibility paint on about 25 per cent of the surfaces of all civilian airplanes. The purpose is to reduce collisions by making aircraft more conspicuous.

The CAB also announced its intention to amend regulations to protect airplanes from potential hazards from the amateur launching or firing of rockets and missiles. Proposed changes would forbid firing a rocket or missile to an altitude of more than 500 ft. from the surface, except with approval of Administrator of Civil Aeronautics, and forbids firing from within or into any control zone that will place the missile within five miles of any airport.

Marine Safety. The Coast Guard's proposed standards, rules, and regulations to implement the Federal Boating Act of 1958 were the subject of a public hearing before the Merchant Marine Council. These items were on the agenda: system of numbering and statistical information applicable to undocumented vessels, boating accidents involving—and boarding of—undocumented vessels.

The Coast Guard also amended its regulations to permit life-saving equipment to dispense with buoyant seine floats for life lines, where such lines are inherently buoyant.

Preparatory work has already been initiated, leading to the convening of a conference in 1960 for the revision of the International Convention for the Safety of Life at Sea (1948) and the International Load Lines Convention (1930). Committees have been set up to develop the position of the United States relative to construction, life-saving appliances, radio, safety of navigation, and nuclear power. All interested parties were invited to submit their views and recommendations.

Self-Powered
COMBINATION SCRUBBER-VAC
Cleans Vast-Area Floors "By the Mile"

Monoxide Eliminator, Powder Dispenser, and Rinse Assembly are accessories

- **Completely mechanizes scrubbing**
- **Coverage up to 24,400 sq. ft. per hour!**
- **Mounts a SELF-STARTING gasoline engine**

This *all-in-one* cleaning unit, *Finnell's 218G Gasoline-Powered Combination Scrubber-Vac,* is indeed the answer to today's need for increasing output per man-hour on vast-area scrubbing. *The 218G completely mechanizes scrubbing* — applies the cleanser, scrubs, flush-rinses if required, and picks up (damp-dries the floor) — *all in one operation!* Independence from power lines permits the machine to go wherever the operator guides it . . . working in and out of production areas with ease . . . *scrubbing continuously.*

Maintenance men appreciate the labor-saving features of this unit. The gasoline engine starts quickly and easily by pressing the starter button. And there are no switches to set for *fast* or *slow* — slight pressure of the hand on clutch lever adjusts speed to desired rate (up to 136 fpm). Two 18-inch brushes give a 36-inch scrubbing surface. *One engine* (2 cyl., 4 cycle, up to 10.1 hp maximum, and air-cooled) operates all working parts. The powerful vac performs quietly.

Whatever the area of your floors, find out what *you* would save with a *Combination Scrubber-Vac. Finnell* makes *self-powered* models, gasoline or propane operated, in 18, 30, and 36-inch sizes, and also *electric* models in sizes to meet specific needs. It's good to know too that *a Finnell Floor Specialist and Engineer is nearby* to help train your maintenance operators in the proper use of *Finnell Equipment* and to make periodic check-ups. For demonstration, consultation, or literature, phone or write nearest *Finnell Branch* or Finnell System, Inc., 2201 East Street, Elkhart, Indiana. Branch Offices in all principal cities of the United States and Canada.

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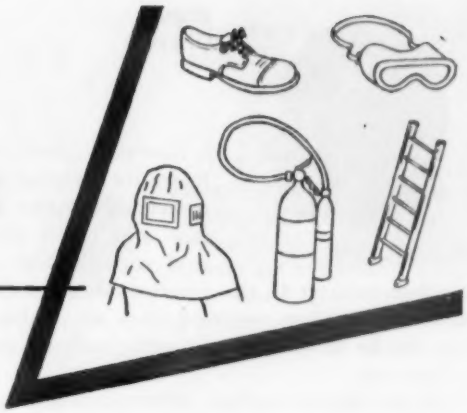
Circle Item No. 88—Reader Service Card

New SAFETY EQUIPMENT



Product announcements in this section are reviewed for compliance with the advertising policy of the NATIONAL SAFETY NEWS. Inclusion should not, however, be construed as endorsement or approval by the National Safety Council.

Air Sampler

Traces of arsine, a hemolytic poison found in many industrial atmospheres, can be detected quickly with this new air sampling method and kit.

Concentrations ranging from less than the maximum allowable concentration of 0.05 ppm to four or more times this amount can be detected. Quantitative tests are made by color comparison of a stain on sensitized filter paper, through which a measured air sample is drawn by a hand pump.

Two complete strokes of the hand pump draw a liter of air through the sensitized filter. Filter paper is sensitized at the time of use by one or two drops of a special reagent solution. After the measured sample of air has passed through the filter, a drop of a second solution is put on the filter. If a stain develops, its color is compared with a color standard for estimation of the concentration.

The test is protected against interference by hydrogen sulfide and sulfur dioxide by a pre-filter, which absorbs these gases in concentrations up to 100 ppm.

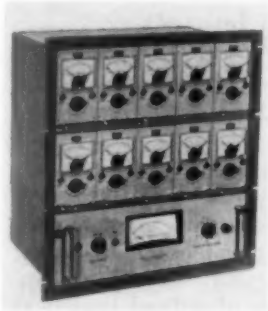
The kit is contained in an aluminum case with carrying strap. It comprises the pump, pre-filter disks, reagent kit, filter papers, tweezers, and color standard comparison chart.

Mine Safety Appliances Co., 201 N. Braddock, Pittsburgh 8, Pa. (Item No. 301)

Floor Absorbent

Colored green granules scattered through each bag assure positive identification to the user of this mineral floor absorbent. Thermal activation gives the product the fast "thirsty blotter" action which the user expects an absorbent to have on oils, greases, acids and liquids. The product's hardness prevents breakdown; there is no dusting or mushiness, and a sure footing is offered. The product can be used in factories, shops and homes.

Speedi-Dri Div., Minerals & Chemicals Corp. of America, Menlo Park, N. J. (Item No. 302)



Gamma Monitoring System

Model AMS-II is a remote-area radiation monitoring system consisting of 10 individual monitoring stations, an alarm system and centralized power supply.

Independent stations are easily removed for service. Removal of one or more channels from the circuit does not interrupt the operation of the remaining channels. Station units are 6⅜ in. high by 3⅜ in. wide and 6 in. deep. Each station unit is complete with a meter relay with a high level alarm, control switch, alarm light, calibration and electronic calibration controls, voltage test controls and connects by a cable to the detector sensing unit. The alarm output relay (DPDT) is rated at 115 VAC 5 amps.

The input and output connections for chambers, recorders and alarms are located at the rear of the cabinet. The AMS-II is available in relay rack or flush panel mounting.

Riggs Nucleonics Corp., 717 N. Victory Blvd., Burbank, Calif. (Item No. 303)

For More Information—Circle Item Number on Reader Service Postcard

Winter Liners

New dark green winter liners are designed to give protection to the head, face and neck against cold, snow and rain with complete comfort to the wearer. Metal snaps and buckles have been removed from all models, and they can be laundered frequently with no damage to materials.

The two styles and four different models are designed to be worn with any safety hat or cap. Drill-style winter liners are made from repellent fabric that is wind and fire resistant. One style has string ties, and the other an elastic chin strap that fastens in a plastic eye. All fittings are plastic, including snaps and straps. All fabrics are lockstitched so they can't unravel, and all outside fabrics are extra-heavy water repellent drill.

Knit style winter liners are manufactured from dark green stretch-on nyoln fabric. The skater's type protects the neck and ears, and the skull type covers only the top of the head.

E. D. Bullard Co., 2680 Bridgeway, Sausalito, Calif. (Item No. 304)

Fire Hose

A UL- and FM-approved lightweight fire hose has a reinforced, high-tensile, 18,000-psi inner tube that reduces the hazards and inefficiencies of unlined linen fire hose.

The hose fits into the same space as unlined hose and, because of the tube, a fog nozzle can be used (not a safe practice with unlined linen hose because of high friction loss and lint clogging), and couplings can be tested for proper installation. The tube eliminates unnecessary water damage and puts all the water on the fire without spilling.

The hose weighs half as much as old-fashioned fire hose: the 1½-in. single jacket weighs 9 lbs., and the 2½-in. double jacket weighs 30 lbs. These weights are for 50 ft. of uncoupled hose.

The hose is available in interior and exterior types and, because of its light weight, has appeal to safety directors. The same basic construction comes with a neoprene cover for the oil and chemical industries.

Goodall Rubber Co., Whitehead Road, Trenton 4, N. J. (Item No. 305)

Foot Guides

Formerly available on a prescription basis only, the Foot Guides or Equalizer Insoles are now available to industrial and retail customers through this manufacturer of safety shoes. They are designed to fit shoes using standard American size and width specifications.

The designer is Dr. Leydecker. Industrial workers who spend a considerable amount of time on their feet can benefit from these equalizer insoles.

Hy-Test Safety Shoe Div., 1509 Washington Ave., St. Louis 66, Mo. (Item No. 306)

Ultraviolet Fire—Smoke Detector

Invisible ultraviolet rays can now detect fire and explosive vapors in homes and industry. An ultraviolet-sensitive tube can simultaneously detect fire, smoke and combustible vapors and is said to be the first device designed that can sense all three of these phenomena at the same time.

The new tube, about the size of an index finger, reportedly makes possible warning devices that are more accurate and versatile than many now available.

Ultraviolet is at the opposite end of the color spectrum from infrared. It is similar to blue light, but its wave length is too short to be seen by the human eye. The capabilities of the new tube, according to the manufacturer, will permit the development of new and better fire and explosion warning systems.

It could be used to detect potentially explosive gases that sometimes accumulate in coal mines. It could also serve as a furnace-flame watchdog to assure greater heating system safety in homes and commercial buildings.

In a typical warning system the tube would work with an amplifier circuit to add up the impulse of electrical energy generated by the tube as it counts ultraviolet rays. Whenever the rate of these impulses exceeded a specific rate, an alarm would be sounded, equipment turned off and sprinklers started.

Minneapolis-Honeywell Regulator Co., 2747 4th Ave., S., Minneapolis 8, Minn. (Item No. 307)

Dry Powder Extinguisher

The U. S. Coast Guard has approved a new portable, dry chemical fire extinguisher for boats. These devices will replace present carbon tetrachloride and chlorobromethane extinguishers which the Coast Guard no longer approves as new and replacement equipment.

The non-toxic dry chemical has the fire-killing power of four one-quart tetrachloride or chlorobromethane units.

The Protexall Deluxe is approved by UL and will snuff out fires caused by short circuits in electrical wiring, spilled gasoline, malfunctioning cooking stoves, spontaneous combustion in storage areas. It does not give off poisonous fumes or gases and does not form a foam or liquid.

When the extinguisher's handles are squeezed together, powder is expelled by a force of 150 lbs. of compressed air. The extinguisher can be recharged by the owner or at many local stations.

The powder is harmless to people and food. The Protexall Deluxe is available in a single pack or 4-pack dispenser display with instructions featuring marine use.

American LaFrance Corp., 100 E. LaFrance St., Elmira, N. Y. (Item No. 308)

Flat-Step Marine Ladder

A new flat-step marine ladder, designed for safety and to withstand hard usage, is constructed with side rails of Sitka spruce or west coast hemlock reinforced with aircraft cables, hand rails of 1½ in. diameter maple, linseed oil treated, strong steel boots, all metal parts plated and with the new wide aluminum safety tread step. This construction is 25 per cent lighter in weight than similar all-metal products.

The new steps are a one-piece raised serrated stamping that forms a strong grated surface. It has a 55 per cent open area which will not allow snow, sleet or ice to build up, and the tooth-like projections assure a firm non-slip surface for boarding.

The Cleveland Ladder Co., 13921 Aspinwall Ave., Cleveland 10, Ohio (Item No. 309)

Self-Adhering Safety Tape

"Guardtex" is a green, safety-colored, self-adhering safety tape. This tape is reported by the manufacturer to help lower accident losses and speed production by protecting fingers, hands and forearms against cuts, burns, and abrasions and by helping to reduce eye strain.

The product reportedly is easy to apply and remove and is dispensed in rolls of desired widths. It conforms neatly to finger contours and preserves the natural feel and flexibility of the fingers. A special oil-resistant type of this tape is available in white. It is especially valuable in handling small parts or sharp-edged sheets or hot glass and for working with plastics. It offers protection against flying sparks and against cuts, scratches and abrasions from rough, sharp, splintery or other hazardous materials.

General Bandages, Inc., 8300 Lehigh Ave., Morton Grove, Ill. (Item No. 310)

Electrical Trolley System

A new electrical trolley system of radically different design is said to provide 100 per cent safety at all times. Design also is intended to eliminate the need for maintenance resulting from foreign matter coming in contact with any part of the system.

The system will carry high amperages required by heavy-duty cranes and similar equipment. Components include an extruded, hard-drawn copper conductor bus, a sliding collector shoe of self-lubricating alloy copper, and a flexible protective sheath covering bus and shoe. A Koroseal sheath is used for inside applications, neoprene and nylon for exterior. In crane bridge electrifications, the collector shoes can be mounted on a horizontal plane on minimum spacing of 3 in.

This is a copper-to-copper system which maintains total area of contact between conductor and collector. This principle, together with the covering sheath, allows continuous operation despite the presence of dirt, grease, or acid fumes. The system is self-de-icing on exterior installations.

The system is for installation from 110 to 600 v., and collectors are for from 70 to 1125. Five sizes of conductor bus are available with electrical carrying capacities from 325 to 4500 a.

U-S Electric Mfg. Co., Banksville Road, Pittsburgh 16, Pa. (Item No. 311)

Safety Hat Suspension

This manufacturer's industrial safety hats now have the Geodetic strap suspension for more effective protection against impact shock. This suspension system was developed by the Cornell Aeronautical Laboratory for the Armed Forces.

The suspension fits the contours of the head. Impact from a blow or falling object is spread and dissipated so the wearer can sustain a heavy impact shock without injury. The suspension is designed to minimize danger of "bottoming," since it conforms to the head. The gripping effect reduces the danger of the hat shell tipping and crashing against the wearer's head, as a result of angular blows to the hat.

The crown straps in the system are permanently fitted to maintain 1¼ in. between the top of the head and the hat shell. In some safety hats with a conventional string suspension, the worker can loosen the string so the head clearance is dangerously reduced. Tests have proved that death or serious injury from head blows often results from shock transmitted to the brain through a conventional head harness, even though the hat shell may not be penetrated. With the Geodetic suspension, proper suspension is maintained so protection remains constant.

Willson Products Div., Ray-O-Vac Co., 212 E. Washington Ave., Madison 10, Wisc. (Item No. 312)

Woodworking Machine Safety Guard

An industrial safety guard, designed to fit this manufacturer's standard industrial woodworking machines, has been developed for shaping, jointing, and rafter-notching applications formed on the radial-arm machine by placing the motor in a vertical or beveling position.

The guard will supplement the standard industrial safety guard used in more conventional cut-off operations, when the motor is positioned horizontally. Made of aluminum, the new guard is adjustable to any angle and to the desired clearance of any lumber thickness.

Design of the machines permits suspension of the cutting tool above the surface of the material being processed. This feature allows the guard to safely enclose the cutting tool from side approaches and across the top. It is considered impossible for the operator's hands to come in contact with potentially dangerous areas during normal operation.

DeWalt Div., AMF, Dept. PR, Lancaster, Pa. (Item No. 313)

Silent Floor Machine

A 20-in. floor machine with a new type of gear reducer, separate from the motor, assures quieter operation and simpler repair.

Model 20-E is balanced for ease of operation. The 1 hp. motor rests directly over the brush with the weight assuring balance, uniform coverage and effective use of power. Runaways are prevented by the safety switch, which instantly stops the machine, once the grip on the handle is released.

The machine is available with many interchangeable accessories. It comes equipped with 50 ft. of cable; a hair-trigger, which turns the machine on and off with pressure from either hand; a simple reversal mechanism that reverses the rotation of the brush; and an optional handle that adjusts to any angle through an arc of 90 degrees from the vertical.

The machine polishes, scrubs, sands, seals, waxes, steel wools and shampoos. In addition to the 20-in. model, a line of silent floor machines are available in 16-in. brush diameters.

Huntington Laboratories, Inc., Huntington, Indiana (Item No. 314)

Eye Protection Carrying Kit

This Show-Case sales display kit contains 12 different eye-protection items for welders in quantities balanced according to their turnover frequency.

A hinged carton has been designed for the package. It contains 118 products, such as goggles, side shield glasses, welding lenses and plates, headbands and dust respirators. The carton doubles as a stocking-shipping-carrying case and a counter display case for store or shop. The manufacturer states that the kit includes every item necessary to meet 90 per cent of all welders' eye-protection requirements.

Sellstrom Mfg. Co., 222 S. Hicks Road, Palatine, Ill. (Item No. 315)

Heat Resistant Material

Difficult insulatating problems may be solved by a new white fibrous material, which combines light weight with excellent resistance to heat.

Called fibrous potassium titanate, the new product is composed of a compact mass of crystalline fibers which, due to their fineness, give it a talc-like feel. Because of the small diameter and high reflectance of the fibers, the new insulating material blocks heat penetration by scattering incoming infrared rays.

In the 1300 to 2100-degree range the product is about twice as effective on a volume basis as any known insulating material. As a thermal insulator at high temperatures, fibrous potassium titanate may offer construction advantages for rockets and missiles, aircraft and atomic-powered vehicles.

Other suggested applications include use for electrical and acoustical insulation, reflective shielding for heating units and ovens, gaskets and packing, filters, fire blankets and protective clothing, high temperature paints or coatings, high temperature cement and caulking, paper filler, and plastic reinforcement.

Blocks, which can be formed into any desired shape while wet, show exceptional dimensional stability on prolonged exposure to heating. Fibrous potassium titanate has almost four times the insulating value of commercial fiberbrick at comparable temperatures with one-twelfth the weight. One of the unusual advantages of the product is ease of fabrication. Present available forms include loose fibers, loose fill, blocks of varying densities, mats of various thicknesses, and "lumps."

Public Relations Dept. E. I. duPont de Nemours & Co., Inc., Wilmington 98, Del. (Item No. 316)

Dry Chemical Extinguishers

Two new pressurized dry chemical portable fire extinguishers come in 2½ and 5 lb. capacities. The models put out as much fire as 8 and 16 carbon tetrachloride portables respectively.

The designs stress simplified, self-evident operation for anyone picking up a unit in an emergency. Aim the discharge nozzle at the base of the fire, and depress the actuating lever. Immediately a cloud of dry chemical envelops the blaze. There is no trigger locking pin to remove, no valve to turn, no inverting and no bumping.

The pressure gauges indicate whether the models are charged and ready for action. Their operating range of from 110 to 180 psi. means they can be quickly recharged with air or nitrogen. Special wall brackets act as locking pins and discourage accidental discharge.

The dry chemical portables are approved by UL, Factory Mutual and the U. S. Coast Guard.

Walter Kidde & Co., Inc., 675 Main St., Belleville 9, N. J. (Item No. 317)

Safety Crank

This safety crank is said to almost eliminate the dangerous *kick-back* encountered when starting engines with a rope or crank.

The crank has four cams, spring-loaded against the shaft hub to allow the crank to turn in one direction. When the engine kicks-back, the cams jam against the hub, stopping the kick-back instantly. The safety crank also has a friction clutch to let the engine move in a reverse direction and prevent damage to the crankshaft or adaptor.

The safety crank fits any engine started by a rope or crank. It is used by many of the major companies in the oil, pipeline and construction industries.

Win-Well Mfg. Co., P. O. Box 412, Tulsa, Okla. (Item No. 318)

Electric Hoists

Three new models of the CM Lodestar electric hoist extend the capacity range to 2 tons, and double the lifting speeds available in the ½-and 1-ton sizes.

Model R has a capacity of 2 tons and a lifting speed of 8 fpm. Model L has a 1-ton capacity and lifts at 16 fpm. Model J has a ½-ton capacity and lifts at 32 fpm. This provides a great selection of lifting speeds and of capacities ranging from ⅛ to 2 tons.

Chisholm-Moore Hoist Div., Tonawanda, New York (Item No. 319)

For More Information—Circle Item Number on Reader Service Postcard

Winter Liner

An extra coverage style Thirty Below Head Snugger winter liner gives protection required by safety hat users for extreme cold weather. The 0-30 design extends down inside the wearer's coat collar and side laps close under the chin. The fit conforms closely, yet comfortably, to hug the head.

An outer shell of closely woven twill resists wind and is Zelan rainproofed. The lining is double napped flannel, insulative and perspiration absorbent. As an extra barrier to cold penetration, a thin layer of Thermal Foam is quilted between the inner and outer fabrics.

The headband of the safety hat need only be adjusted upward a one-eighth size marking to accommodate the 0-30 winter liner. Installation is easy with four gripper fasteners, and the chinstrap is heavy elastic webbing.

For power line workers, three "EL" series Head Snuggers are offered. These have non-metallic fastenings of plastic and molded nylon. There are eight models of the Head Snugger winter liners and two Top Warmer skull cap styles to fit the known makes of safety hats and caps.

Kennedy-Ingalls, Inc., 3735 N. 35th St., Milwaukee 16, Wis. (Item No. 320)

Hazardous Vapotester

The pocket-size Bantam Vapotester, quickly detects hazardous vapors in on-the-spot work area checks.

The rugged, lightweight combustible gas analyzer is easy to operate in the palm of the hand or in its own case. It is self-contained with long battery service life.

One knob turns the unit on and *zeroes* the meter. A pilot light indicates *on* and also illuminates the easily read dial, which features a 2½ in. scale.

A sample hose and aspirator bulb snap instantly into either side of the instrument for left or right-hand use. The compact leather case holds the aspirator bulb, 5 ft. sampling hose with a short probe, spare battery, and a screw driver. A spare filament is also included.

The unit is not affected by the vapors of gasoline containing tetraethyl lead. The instrument with case and accessories measures 4 in. by 6 in. by 5 in. and weighs 3¾ lbs.

Davis Emergency Equipment Co., Inc., 55 Halleck St., Newark 4, N. J. (Item No. 321)

Radiation Hazard Signs

Self-sticking signs for identifying radiation and x-ray hazards are available in five sizes from 1 in. by 2¼ in. to 5 in. by 14 in. These signs comply with AEC Regulation 20.203, covering wording, labeling and identification of radioactive hazards, and have magenta symbols and wordings on a fadeproof yellow background.

The hazard signs are made from B-500 vinyl cloth and adhere to any clean surface without moistening. They are mounted on dispenser cards for easy storage and use and conform to smooth, rough, straight, concave or irregular surfaces. Each sign has a silicone plastic overcoating, which protects the legend from grease, dirt, dust and abrasion.

Included in signs now available from stock are x-ray and ionizing radiation signs which comply with regulations of many states requiring identification of equipment and areas where harmful radioactive dosage may occur.

W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 9, Wis. (Item No. 322)

Metal Mesh Slings

Greater safety and freedom from load damage are claimed, when these metal mesh slings are used in handling heavy bridge girders.

The girder illustrated is more than 100 ft. long and weighs more than 28,000 lbs. The slings are 16 in. wide and 256 in. long. Safety is provided because the spiral loop construction of the metal mesh sling will not snap suddenly and drop the load, endangering men and equipment on the job site.

Freedom from load damage is maintained, because the sling in this choke hitch places the weight of the load on the heavier bottom flange of the girder. Other methods of lifting, such as use of clamps, require that the lift be made from the lighter top flange, thus risking the possibility of bending the flange.

In this rig the gripper sling wraps completely around the load without cutting through the coating of protective paint on the girder.

Cambridge Wire Cloth Co., Cambridge, Md. (Item No. 323)

Industrial Glove

This V-20 medium-weight model withstands deteriorating effects of 50 per cent solutions of nitric and chromic acids. Both of these substances are highly corrosive and deteriorate rubber and synthetic gloves. The V-20 is made of Pylox and is ideal for jobs requiring finger sensitivity. The non-binding design of the tapered fingers and roomy palms give barehand comfort to the wearer. These gloves also can be turned inside out, so the textured inside finish can provide a non-slip grip sometimes required for special handling jobs.

The V-20 is resistant to alkalis and inorganic acids, oils, greases and some solvents. Tests show the gloves stay flexible under unusual conditions. It is available in small, medium and large sizes and offers ample wrist protection. The non-allergenic properties makes the gloves useful for persons allergic to ordinary rubber gloves.

Pioneer Rubber Co., 1939 Tiffin Road, Willard, Ohio (Item No. 324)

Scrubber Vacuum

A rider-type combination scrubber-vacuum machine capable of cleaning up to 64,500 sq. ft. of open floor area per hour has been designed for industrial users. Model 72-F will remove dirt and grime by four 18-in. brushes operating at 180 rpm. under variable pounds of pressure on the floor. The brushes agitate a cleaning solution dispensed from a 150 gal. solution tank.

A giant-sized V-shaped squeege funnels loosened dirt into a 150 gal. pickup tank via a 75 cfm. vacuum. The unit is powered by an air-cooled 27 hp. gas or propane engine, and all brush and squeege movements are actuated by a hydraulic power take-off system controlled by the operator.

With an over-all length of 114 in. and a width of 72 in., the 72-F can turn in its own length and operates effectively in a 10-ft.-wide aisle.

The unit requires one operator and operates at 2 to 3 mph.

Finnell System, Inc., 500 East St., Elkhart, Ind. (Item No. 325)

Safety Tread Coating

Said to adhere to such base materials as steel, concrete and wood, Safety Tread Coating is applied by brush or squeegee, and cures for traffic in a few hours. The kit, sufficient to cover about 50 sq. ft. of concrete, includes a container of plastic resin, one of activator and a shaker-top can of abrasive grit.

The resin and activator are stirred together and applied immediately to the surface. While still tacky, the coated area is sprinkled with the grit. The cured surface resembles that of fine sandpaper, and because of the powerful bond of the resin, cracking, peeling, or chipping is eliminated.

Ring Chemical Co., 1112 Rosine St., Houston, Texas (Item No. 326)

For More Information—Circle Item Number on Reader Service Postcard

NEWS ITEMS

Fine Organics, Inc.

Executive and sales offices are now located in the new plant at 205-225 Main Street, Lodi, N. J. The company, established in 1939, does business involved with the synthesis of special organic compounds. The company also manufactures Safe-Tee solvents, emulsion cleaners, carbon removers and other chemical products sold to industry, institutions and government agencies.

Ellis E. Singer

Industrial Acoustics Co., Inc.

Ellis E. Singer has joined this New York company as manager of the medical department. This department is responsible for the design, manufacture and sales of the firm's line of clinical audiometric examination rooms. An experienced clinical audiologist, Mr. Singer is a specialist in speech and hearing and is co-author of the medical text book *Functional Otology, the Practice of Audiology.*

Before coming to the company, Mr. Singer was associated with the Beltone Hearing Aid Company as clinical audiologist and director of the audiometer division.

Calendar Contest Winners For October

What would your Safety Saying have said?

John R. Henry, central office repairman for Mountain States Telephone and Telegraph Company, Denver, Colo., won the $100 first prize in the National Safety Council's "Safety Saying" contest with this line:

You're sitting a bad example, Pop!

The contest appears monthly on the back pages of the Council's calendar. The theme for the October contest was "Overloading Causes Accidents."

Second prize of $50 went to Mrs. Lucille Oosterhous (Individual Member), of Takoma Park, Md. Her entry was:

Never put an overload on a plug!

Ray E. Peterson of the Colorado Department of Education, Denver, won third prize of $25 for this line:

Carelessness won't win or place, but it always shows!

The 30 winners of $5 prizes are:

Mrs. Ann Lindsey (Individual Member), Yuma, Colo.

Mrs. F. Ann Murray (Individual Member), San Antonio, Texas.

Miss Edith Phillips (Individual Member), Santa Monica, Calif.

Mrs. William Fontaine (Individual Member), Inglewood, Calif.

D. W. Wadsworth, Northwestern Bell Telephone Co., Des Moines, Iowa.

Mrs. Velma Schelles (Individual Member), Battle Creek, Mich.

Talitha Smith, Henry County Library, McDonough, Ga.

George H. Quick, Mississippi Lime Co., St. Genevieve, Mo.

Louis J. Pourciau, Jr., The Murray Company of Texas, Inc., Dallas, Texas.

Reginald W. Collett, Ronson Products Ltd., Leatherhead, Surrey, England.

Scott Boyd, Kennecott Copper Corp., Ray Mines Div., Hayden, Ariz.

Miss Margaret E. Fish, Cheney Brothers, Inc., Manchester, Conn.

Charles T. Wade, Radio Station WLAK, Lakeland, Fla.

Mrs. Alice L. Cain, The Texas Pipe Line Co., Electra, Texas.

E. W. James, Sundstrand Machine Tool Co., Rockford, Ill.

Karl Duerr, International Business Machines Corp., Endicott, N. Y.

Miss Dorothy C. Oliver, Swift & Company, North Portland, Ore.

Earl Brandenburg, The Formica Co., Cincinnati, Ohio.

Roy Hopkins, Lake Superior District Power Co., Ironwood, Mich.

L. J. Parr, Standard Oil Co. (Ind.), Whiting, Ind.

Miss Norma L. Berg, Employers Reinsurance Corp., Kansas City, Mo.

Mrs. Mary D. McCullough, Timber Products Co., Medford, Ore.

Mrs. Edna Trevillian (Individual Member), Chloride, Ariz.

Mrs. Jack Whitnall (Individual Member), Yakima, Wash.

Mrs. Neva Fulk (Individual Member), Arlington, Calif.

Mrs. D. M. Powell (Individual Member), Fort Wayne, Ind.

Mrs. W. I. Mouat, Crown Zellerbach Corp., Ocean Falls, B. C.

James Cahill, Bendix Aircraft Corp., Kansas City, Mo.

John I. Hauser, The Atlantic Refining Co., Philadelphia, Pa.

Walter Menning, Alpha Portland Cement Co., LaSalle, Ill.

You are young only once. After that it becomes necessary to think up new excuses for your mistakes.

Some cause happiness wherever they go; others whenever they go.

TRADE PUBLICATIONS

These trade publications will keep you up-to-the-minute on new developments in safety equipment and health products. All catalogs are free, and will be sent without obligation. Just circle publication number on the Reader Service Postcard.

Welding Curtains

The Special Products Div. of the Singer Glove Mfg. Co. has just issued a 3-page catalog supplement. It shows their extremely successful portable screen now available with new curtain materials in addition to standard 12-oz. fire-resistant duck. One of the new materials is Singer Neo-Weld, a yellow neoprene-coated fiber glass that will give greater protection and longer service. The other new material is aluminized asbestos cloth, which offers the maximum protection against radiant heat and flame. It protects by reflection and will withstand temperatures up to 1400 F. Also in this same supplement are curtains, blankets and drapes in a choice of 7 materials including standard duck, neoprene-coated fiber glass and nylon, regular asbestos, wire-inserted asbestos and aluminized asbestos. Special Products Div., Singer Glove Mfg. Co., 860 W. Weed St., Chicago 22, Ill.

For more details circle No. 400 on enclosed return postal card.

Ladders

Bulletin L-94 describes and illustrates 20 different types of ladders, and safety aluminum ladders. It features ladders for painters, plasterers, electricians, mechanics, roofers, as well as four new ladders—a New Household and Utility Step Ladder, multi-purpose Extend-A-Step Ladder, and a Push-Up Extension Ladder. Patent Scaffolding Co., Inc., 38-21 Twelfth St., Long Island City 1, N. Y.

For more details circle No. 401 on enclosed return postal card.

Palletized Handling of Kegs and Multi-Sized Cartons

A new case history bulletin that describes and illustrates how warehouse space was increased 20 per cent and the working force decreased by 33 per cent through the use of palletized handling of kegs and multi-sized cartons, is available from Lewis-Shepard Products, Inc., 125 Walnut St., Watertown 72, Mass. Bulletin No. 509-2, a six-page, two color, presentation, has nine photos, showing the step-by-step procedure followed, and complete specifications of pallet sizes, stacking heights, and equipment necessary to effectively utilize a system of palletized loads.

For more details circle No. 402 on enclosed return postal card.

Tramrail Engineering

Detailed studies of track design, peening, and stresses are given — described and illustrated in booklet No. 2008-N. Also covered are various types of carriers, cranes, tractors, track switches, buckets, grabs and electrification. Dozens of photographs illustrating a wide variety of overhead materials handling installations are included. Cleveland Tramrail Div., Cleveland Crane & Engineering Co., Wickliffe, Ohio.

For more details circle No. 403 on enclosed return postal card.

Commercial and Industrial Cleaners

Brochure illustrates and describes complete line of electric cleaners for all cleaning applications. The full range of hand portable models, industrial tank cleaners and commercial model cleaners are discussed. All cleaners featured have the UL approval. Ace-Sycamore, Inc., 448 DeKalb Ave., Sycamore, Ill.

For more details circle No. 404 on enclosed return postal card.

Transporter Facts and Factors

The operational features that make the "Transporter" walkie-type truck, manufactured by the Automatic Transportation Co., of Chicago, ideally suited for work in highly congested areas and for short hauls or intermittent operations, are illustrated in a new 16-page color booklet entitled, "Transporter Facts and Factors." This booklet tells how Transporters "give one hand the power to move tons" and helps to determine which of these operator-led trucks is best suited for a particular job. Included in the booklet are applications photographs, custom-built specials, types of pallets or skids used with each Transporter, etc. Automatic Transportation Co., 149 W. 87th St., Chicago 21, Ill.

For more details circle No. 405 on enclosed return postal card.

New Quaker Movie

"Progress in Industrial Rubber Products" is the title of a new 16mm color and sound movie describing the operation of a modern rubber plant put out by the Quaker Rubber Div., H. K. Porter Co., Inc., Tacony and Comly Sts., Philadelphia 24, Pa. The 25-minute film reveals how raw materials are used to produce quality rubber products through improved production facilities. It describes the process of making such vital products as conveyor belts, wrapped and molded hose, fire hose, escalator hand rails and electrical insulating tapes. Scenes of Quaker's modern laboratory facilities are highlighted showing the various routine and special tests performed on all raw materials and finished products.

For more details circle No. 406 on enclosed return postal card.

Anti-Slip Surfacing

Bulletin describes an Anti-Slip Protective Coating called "Poxigrip" for industries, institutions or home flooring and pavements. Poxigrip comes in two grades, fine grade for foot traffic, coarse grade for auto, lift truck and other vehicular traffic. Poxigrip can be used on stairways, ramps, kitchens, shower rooms — anywhere that treacherous floors might cause injury. A technical bulletin gives complete applications. Lancaster Chemical Corp., Carlstadt, N. J.

For more details circle No. 407 on enclosed return postal card.

New Slings

For the first time, Macwhyte Cable-Laid "Safe-Guard" Slings and Macwhyte Rope-Laid "Safe-Guard" Slings are completely catalogued. These slings are made with the famous Macwhyte "Safe-Guard" Flemish Eyes and "Safe-Guard" Sleeves. The Macwhyte Cable-Laid "Safe-Guard" Slings are recommended for applications where a soft sling body is required and where flexibility is more important than resistance to abrasion. The Macwhyte Rope-Laid "Safe-Guard" Slings are for applications where abrasion resistance is a first consideration. Specifications, Load Ratings, and Standard Fittings are now catalogued for sizes ¼" diameter to 1½" diameter, inclusive. Bulletin No. 5886 gives complete details. Macwhyte Co., Fabricated Products, Kenosha, Wis.

For more details circle No. 408 on enclosed return postal card.

Explosion-Proof Electrical Equipment

"An Electrical Engineer Comes To Crouse-Hinds" is the title of a new 6-page folder by Crouse-Hinds. The bulletin describes design and construction principles involved in manufacturing Crouse-Hinds Condulet electrical equipment for hazardous locations. Also emphasized is the great variety of explosion-proof equipment in everything from lighting to motorcontrols. Bulletin No. 2710 gives full details. Crouse-Hinds Co., Syracuse 1, N. Y.

For more details circle No. 409 on enclosed return postal card.

365 Rotary Compressor Bulletin

A new 4-page bulletin describing its new 365 rotary portable air compressor has been published by the LeRoi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis. The bulletin number P-121B, includes photographs to illustrate features of the 365RD2, which the manufacturer claims to be the slowest running (1100 rpm) 365 cfm on the

market. The bulletin also includes general specifications.

For more details circle No. 410 on enclosed return postal card.

Cold Cleaning Solvent

A new "safety in use" approach for evaluating the relative safety of solvents used in "cold cleaning" of metal parts is contained in a new technical report published by the Du Pont Electrochemicals Dept. The report establishes a new concept of a relative safety index for solvent evaluation based on maximum allowable concentration, vapor pressure, and evaporation rate of the solvents. Heretofore, there has been no good basis offered for relating these factors from an over-all "safety in use" standpoint. Results are confirmed by extensive testing of the atmosphere during "cold cleaning" operations using two commonly used solvents, perchlorethylene and methyl chloroform (1, 1, 1 trichlorethane). "Cold Cleaning" is a broad term applied to industrial cleaning operations where solvents or solvent mixtures are applied at room temperatures. Chlorine Products Section, Electrochemicals Dept., Du Pont Co., Wilmington 98, Del.

For more details circle No. 411 on enclosed return postal card.

Storage Racks

A folder describing the new P-S 58 series of low cost storage racks has been prepared by Palmer-Shile Co., 12643 Mansfield, Detroit 27, Mich. Photographs showing the many uses of the racks in the warehousing of almost any kind of materials stress the economy and versatility of the new design. Folder illustrations also emphasize the advantages of the rack in grocery warehousing, in the storage of perishable foods at various temperatures, frozen foods, dry products, drugs and other consumer merchandise. The racks are built of heavy-duty channel steel (to customer specifications) for use with pallets, skids or barrels for storage of light or heavy materials up to ceiling height.

For more details circle No. 412 on enclosed return postal card.

Constant-Temperature Catalog

A new 60-page, fully illustrated, Constant-Temperature Catalog No. 500 describing a complete line of baths, conditioned-air devices, and temperature-humidity cabinets, is now available from the American Instrument Co., Silver Spring, Md. (8030 Georgia Ave.) The catalog lists over 100 constant-temperature laboratory instruments applicable to every field of research, materials testing, quality control and production. Included in the catalog are baths, ovens, sterilizers, incubators, environmental test equipment, steam-generating humidifiers, dry-ice cabinets and various types of thermometers, as well as many unique accessory items designed to provide utmost flexibility.

For more details circle No. 413 on enclosed return postal card.

Electrical Tapes

A full-color catalog folder showing their entire line of electrical insulating tapes has just been issued by Plymouth Rubber Co., Inc., Tape Div., Canton, Mass. Included also in this folder are complete specification data charts for all Plymouth friction tapes, splicing compounds and plastic tapes.

For more details circle No. 414 on enclosed return postal card.

Functional Color Kit

The proper functional use of color in industrial plants, schools, and hospitals, is explained by a foremost color authority in this new "Functional Color Kit" developed by Colorizer Paints. A color standard includes 36 recommended paint colors chosen for functional, decorative and safety use. Detailed brochures illustrate examples of effective use of color on interiors and exteriors of institutions in the four categories. Colorizer Associates, 345 N. Western Ave., Chicago 12, Ill.

For more details circle No. 415 on enclosed return postal card.

Aluminum Safety Ladders

Aluminum Safety Stepladders that furnish all the safety of a stair are illustrated and described in this 4-page brochure available from D. R. Card Co., 820 Merchandise Bldg., Minneapolis 3, Minn.

For more details circle No. 416 on enclosed return postal card.

Switches

This 32-page catalog No. 62-C has over 200 listings (with photos) of basic switches and devices. Among these are the high-precision roller lever switch, adjustable actuator, "pulse" and "coin" switches. Micro-Switch Div., Minneapolis-Honeywell Regulator Co., Freeport, Ill.

For more details circle No. 417 on enclosed return postal card.

Vacuumized Sweeper

Bulletin, 4 pages, lists four main advantages for this sweeper; dust nuisance, no need for water spray, works in tight areas. Applications and specifications included. G. H. Tennant Co., 2530 N. 2nd St., Minneapolis, Minn.

For more details circle No. 418 on enclosed return postal card.

Pyrojector

Automatic heat, smoke, and explosion relief unit is explained in illustrated booklet (Form No. PJ-1). Unit opens when fire or explosion occurs, and smoke, heat, explosive force go through roof. The Swartwout Co., 18511 Euclid Ave., Cleveland 12, Ohio.

For more details circle No. 419 on enclosed return postal card.

Portable Fire-Fighting Equipment

Fire-fighting departments will be interested in the new and improved weapons for combating fires in highly volatile flammable liquids and ordinary combustibles discussed and illustrated in Rockwood's Fire Fighting Products Catalog. Rockwood Sprinkler Co., 38 Harlow St., Worcester, Mass.

For more details circle No. 420 on enclosed return postal card.

Radiation Detection Instruments

A transistorized radiological survey meter measures low-level radiation for personnel and food and water checks. Three types of self-reading dosimeter pens permit an individual to keep continuously informed of radiation exposure in ranges 0-200 milliroentgens, and 0-20 and 0-100 roentgens. Literature gives full details. Universal Nansistor Products Corp., 17 Brooklyn Ave., Westbury, N. Y.

For more details circle No. 421 on enclosed return postal card.

Storage Battery Racks

A 12-page illustrated catalog reviews steel racks used to store storage batteries. Maintenance and increased deliverable voltage are stressed as major benefits of this equipment. Tips are also included for rack selection. The Electric Storage Battery Co., Rising Sun and Adams Ave., Philadelphia 1, Pa.

For more details circle No. 422 on enclosed return postal card.

Light Duty Marking Kit

Data sheet offers information concerning a new marking outfit. The outfit comprises a standard holder, special type fonts and a compartmented box. Information is given on holder sizes, type capacities, and type fonts for ease in ordering. M. E. Cunningham Co., 1025 Chateau St., N. S., Pittsburgh 33, Pa.

For more details circle No. 423 on enclosed return postal card.

Control Unit for Fire Alarm Systems

Brochure describes a unit that can be used to monitor circuits, common equipment, bells, tripping devices, etc. Unit assures protection for Class "A" emergency signaling operations for proprietary, auxiliary, remote station or local systems. Illustrations and technical data on the new equipment are furnished. Notifier Corp., 239 S. 11th St., Lincoln 8, Nebr.

For more details circle No. 424 on enclosed return postal card.

Industrial Work Gloves

Colorful new catalog describes a complete line of industrial gloves. Of special interest to safety directors should be a new service whereby safety slogans can be imprinted on the cuffs and backs of gloves. Wearer is provided a constant reminder to work carefully. 40 suggestions for slogans are also offered. Riegel Textile Corp., 260 Madison Ave., New York 16, N. Y.

For more details circle No. 425 on enclosed return postal card.

Safety Links

Bulletin introduces safety links for use with cranes operating on or near high voltages. Links are rated at same working loads as hooks they support, from ½ to 25 tons, and di-electric strength from 1 to 50 KV. Fatality through cranes contacting high voltage lines can be avoided through use of this insulated safety link. E. D. Bullard Co., 2680 Bridgeway Blvd., Sausalito, Calif.

For more details circle No. 426 on enclosed return postal card.

Self-Sticking Markers

Multi-color booklet illustrates plastic-coated industrial markers, with a multitude of uses including pipe and cable marking, aisle, bin, area and column designating. Also featured are non-conductive conduit and voltage markers and easily-read, all-purpose numbers and letters. W. H. Brady Co., 727 W. Glendale Ave., Milwaukee 9, Wis.

For more details circle No. 427 on enclosed return postal card.

Impregnated All-Weather Clothing

Full details, illustrations and line drawings of reinforcement features are contained in this new two-color bulletin. Head-to-toe, foul-weather protection is objective of this line of work garments which are polyvinyl chloride-impregnated for added protection and long life. Ideal for firemen, maintenance workers, guards, construction and pipeline workers, farmers, and gas, telephone and electric utility repairmen. Jomac, Inc., 6128 N. Woodstock, Philadelphia 38, Pa.

For more details circle No. 428 on enclosed return postal card.

Air-Fed Oven Suits

Illustrated leaflet shows aluminized asbestos suits of a new design which incorporates light-weight properties and one-piece construction with heat-reflection and built-in air supply. Vent in neck area allows dehumidified air to escape while maintenance of positive air pressure prevents fabric from making close contact with wearer. For use in oven repair, etc. Mine

Safety Appliances Co., 201 N. Braddock Ave., Pittsburgh 8, Pa.

For more details circle No. 429 on enclosed return postal card.

Rubber Footwear

Brochure illustrates and describes a general line of industrial rubber footwear, from body boot through hip boot and arctic to conventional rubber. Also shown are neoprene oil, grease and acid resistant footwear with wide application in industry, farm, sport and outdoor repair. Beacon Falls Rubber Footwear, Div. of U. S. Rubber Co., Naugatuck, Conn.

For more details circle No. 430 on enclosed return postal card.

Hydraulic Lift Tables

Booklet describes how certain problems of lifting, feeding and work positioning may be simplified. A new series of lift tables is discussed and adaptations of standard models are pictured. Southworth Machine Co., 340 Warren Ave., Portland, Maine.

For more details circle No. 431 on enclosed return postal card.

Welder's Goggles

Brochure detects welder's goggles which have a new ventilating system to prevent fogging and resist harmful infra-red and ultra violet rays. Goggles for chippers are also described. Glendale Optical Co., Inc., 600 W. Merrick Rd., Valley Stream, N. Y.

For more details circle No. 432 on enclosed return postal card.

Stretchers

Catalog defines a complete line of portable and emergency stretchers. Accessory devices are also featured. All models are illustrated. The Washington Products Co., 238 S. Fayette St., Washington C. H., Ohio.

For more details circle No. 433 on enclosed return postal card.

Full-Vision Visor Goggles

4-page brochure illustrates the various models of a full-vision visor goggle. Plastic goggle is said to be impact resistant and glare reducing. Construction features include a down-angle lens that is clear or tinted. Jones & Co., 861 Broad St., Providence 7, R. I.

For more details circle No. 434 on enclosed return postal card.

Special Hazard Fire Protection

A well illustrated and informative brochure outlines in some detail various types of fire hazards and offers equipment to overcome them. Booklet features a "Quick Selector Chart" to help classify fire hazards and to refer to appropriate equipment for adequate protection. Grinnell Co., Inc., 260 W. Exchange, Providence, R. I.

For more details circle No. 435 on enclosed return postal card.

Fire Extinguisher Chart

Chart outlines the various characteristics of fire extinguishers as rated by the Underwriter's Laboratories, Inc. Operational features, extinguishing effect, capacity and extinguishing agents are highlighted. All types of extinguishers in this company's line are illustrated. American LaFrance Corp., 100 E. LaFrance St., Elmira, N. Y.

For more details circle No. 436 on enclosed return postal card.

Portable Sound Control Units

Booklet describes a lightweight, portable sound absorbing unit for industrial plants, Installation photos and a sound reduction rating chart for the unit highlight the brochure. U. S. Gypsum Co., 300 W. Adams St., Chicago, Ill.

For more details circle No. 437 on enclosed return postal card.

Wide Vision Safety Goggles

In this 4-page brochure a leading safety equipment firm introduces a new series of "Vivid View Wide Scope" goggles. Various sizes, models and advantages are discussed. All standard attachments are mentioned and a disposable goggle cleaning station for proper maintenance is also described. Pulmosan Safety Equipment Corp., 644 Pacific St., Brooklyn 17, N. Y.

For more details circle No. 438 on enclosed return postal card.

Flammable Liquid Storage

Illustrated catalog gives a detailed analysis of oilers, safety cans, oil and gasoline cans and other containers. A numerical index and a diagrammed parts data sheet have been inserted for ease in replacing worn equipment. Eagle Mfg. Co., Wellsburg, W. Va.

For more details circle No. 439 on enclosed return postal card.

Protective Apparel

A complete and comprehensive catalog covering the largest selection of protective apparel available on the market is available from Wheeler Protective Apparel, Inc., 224 W. Huron Street, Chicago 10, Illinois. It illustrates and describes: gloves, coats, pants, overalls, jumpers, fire entry units, finger cots, hand pads, arm and leg protectors, hip leggings, spats, knee pads, sleeves, hoods, helmets, aprons, leggings, chaps, blankets, curtains, power megaphones and many other items related to industrial protection. This catalog is so organized that it may be used as a safety handbook. The catalog is completely illustrated with photographs of every type of clothing required by the heat, abrasive or chemical industries.

For more details circle No. 440 on enclosed return postal card

Tuffy Sling Handbook

A fully illustrated 40-page reference book that covers more than 80 subjects on Tuffy Slings and fittings is now being offered by the Union Wire Rope Corporation, 2224 Manchester Avenue, Kansas City 26, Missouri. Included in the new edition is new reference information condensed into handy chart form on sling types, dimensions and rated loads. In addition, the section Tuffy Sling fittings has been expanded to cover many fittings not previously shown, together with reference charts on sizes, rated loads, etc.

For more details circle No. 441 on enclosed return postal card

Tower Ladder Safety Device

Folder describing use of tower ladder safety device for workers who climb. Especially adapted for use on poles, building, radio and television towers, tanks, derricks or any other high place. Device consists of belt and locking mechanism. Also described and illustrated are tapered steel Lighting Tubes for area and floodlighting for: railroad yards, trucking terminals, parking lots, swimming pools, etc. Meyer Machine, Inc., Red Wing, Minnesota.

For more details circle No. 442 on enclosed return postal card

Sling Chains

Full line of chains plus accessories for sling applications are described with tables and diagrams in 16-catalog S-558. It includes definitions, cautions and instructions approved and recommended by the Chain Institute, Inc., Campbell Chain Company, 415 Norway Street, York, Pennsylvania.

For more details circle No. 443 on enclosed return postal card

Overhead Doors

Two booklets Nos. 96 and 98 describe doors that roll up and doors that roll overhead. Both explain sealing mechanism, mechanics of track or roll systems. Discusses automatic controls and power lifts in detail. Full specs and sizes. Kinnear Mfg. Co., 1720 Fields Ave., Columbus 16, Ohio.

For more details circle No. 444 on enclosed return postal card

Fencing

Catalog 108 gives information on many kinds of fencing for industry, with illustrations of parts. Catalog No. 5 has construction data for metal conveyor belts with diagrams of conveyor applications. Cyclone Fence Dept., U. S. Steel Corp., Carnegie Bldg., Pittsburgh, Pa.

For more details circle No. 445 on enclosed return postal card

Wooden Sole Safety Shoes

A folder that illustrates wooden sole safety shoes of various types for factories, foundries, steel mills, oil refineries, and waterproof boots, acid-proof shoes and strap on soles. Reece Wooden Sole Shoe Co., 13th St., and 41st Ave., Columbus, Neb.

For more details circle No. 446 on enclosed return postal card

On-The-Job Feeding

Literature describes equipment for inside or outdoor industrial feeding. Mobile Canteens, food carriers and liquid dispensers illustrated. A portable, milk dispenser of light-weight, stainless steel is featured. Vacuum Can Co., 19 S. Hoyne Ave., Chicago 12, Ill.

For more details circle No. 447 on enclosed return postal card

Safety Cans and Industrial Lanterns

Justrite 16-page full color catalog includes literature on safety and oily waste cans, dispensing plunger cans. The illustrated catalog describes a line of utility lights, flashlights, railroad lanterns and carbide lamps. Justrite Mfg Co., 2061 N. Southport Ave., Chicago 14, Ill.

For more details circle No. 448 on enclosed return postal card

Mechanical Stirrups

Pamphlet illustrates swing stage and single stirrups equipped with either electric or air power controls for painting or cleaning buildings, bridges, window washing, exterior plastering, etc. Albina Engine and Machine Works, Inc., 2100 N. Albina Ave., Portland 12, Ore.

For more details circle No. 449 on enclosed return postal card

Welding Accessories and Industrial Safety Equipment

Catalog illustrates a larger diversified line of welding helmets, electrode holders, weld cleaning hammers and protective clothing. Also shown are: helmet strap, combination skullguard and face shield, headrest helmets and industrial safety masks. The Fibre-Metal Products Co., Chester, Pa.

For more details circle No. 450 on enclosed return postal card

Cooler Fountains

Catalog illustrating and describing sanitary water cooler fountains, attractive and varied enough to meet any purpose. Complete with layouts, specifications and table of capacities. Halsey W. Taylor Co., North Park Ave., Warren, Ohio.

For more details circle No. 451 on enclosed return postal card

Index to Advertisers

A comprehensive Classified Safety Product Index and a Directory of Safety Equipment Sources appear in the March, 1958 Issue.

When writing them, please mention NATIONAL SAFETY NEWS

CESCO answers still another of your Safety Equipment needs!

Introducing

NEW CESCO All-Plastic Safety Glasses with Side Shields

You asked for them! Now here they are!... New All-Plastic Safety Glasses with Side Shields. Designed and engineered to utilize the most modern materials available, frames and side shields of these new CESCO safety glasses are made of rugged translucent plastic. Lightweight and comfortable to wear, they are ideally suited to meet a wide range of uses where total-enclosure protection is a "must." Plastic side shields are securely fastened to frames. Perforations in shields give proper eye ventilation, and at the same time, eliminate bothersome lens "clouding." Available in flesh tone plastic to win wide worker acceptance.

Here are other features of these outstanding new CESCO Safety Glasses:

- **Your choice of two sizes: No. 386 (46 x 39mm), No. 387 (48 x 41mm)**
- **Popular F7 shape Lens is removable for easy "on-the-spot" repair**
- **Broad-bearing Nosepads give comfortable distribution of glass weight**

ORDER BOTH WAYS...

• If you desire, these new CESCO All-Plastic Safety Glasses can be ordered without side shields. They offer the same outstanding features as the glasses described above. Three sizes: **No. 375F** (44 x 37mm), **No. 376F** (46 x 39mm), **No. 377F** (48 x 41mm)

***ASK** your distributor to show you his complete line of CESCO head and eye protective equipment. There's a CESCO distributor located in most major cities coast-to-coast.*

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AO F9700
2-TONE-ULTRASCOPIC SAFETY GLASSES WITH CALOBAR LENSES

Handsome? Surely, but most important, real *quality* protection. This particular model protects against glare, heat, ultraviolet and infrared radiations as well as against impact of flying particles. Recommended for heat treating, R.R. transportation men, bus and truck drivers and other outside workers. Also available with clear safety lenses.

Our records are full of case histories showing how companies cut costs through eye protection. Want the details? Write us direct at Southbridge, Mass., or call your nearest American Optical Safety Representative.

AO 315 FOUNDRY GOGGLE

New 57.8 mm. wide vision lenses . . . double ventilation (40 mesh screen) . . . and a perfect fit over most types of spectacle glasses. *Soft* plastic mask — with leather available. Super Armorplate clear or Calobar lenses, medium, dark or extra dark. For chipping, melting, pouring, grinding etc. Also available as a dust goggle with 150 mesh screen arrangement. (Cat. #316).

NEW AO SCS-202 LIFT-FRONT ULTRASCOPIC

For open hearth furnace work and under helmet when welding. Features a half-eye metal lift-front segment, hinged to frame top. Special friction joint permits lift section to be raised and lowered repeatedly without loosening. Section is available with cobalt blue or Calobar lenses and can utilize a near point segment for welders who need corrected vision for overhead or shoulder high work.

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